APPENDIX A
ADDITIONAL EVALUATION ACTIVITIES SUBJECT TO BUDGET

This section includes additional evaluation activities identified by the Team as potential enhancements that could be approved by NYSERDA, budget permitting. As the evaluation progresses, the Team will discuss the need for these potential enhancements with NYSERDA, including potential prioritization and trade offs that might need to be made on other core tasks to incorporate the additional work. The evaluation enhancements described in this section are currently not considered part of the core Action Plan.

APPLIANCE PROGRAM

1. **Supplier Interviews**

   To supplement data from NYESP participating retailers and the Home Depot/Lowes corporate interviews, a survey of 70 retail stores is recommended to fully understand the sales trends of ENERGY STAR® appliances before, during, and after the ARRA promotion. NYESP data can be used for the share of sales made by NYESP partners, but the Team recommends that we also gather data from a sample of the remaining retailers. To achieve a 90% confidence interval with +/- 10% precision, a sample of 70 retailers is necessary.

2. **Enhanced Sample Design for Participant Surveys**

   The Enhanced Sample Design for the participant surveys would allow for stratification by rebate type: appliance only and appliance with recycling for each type of appliance in Option 1 and for the bundle of appliances in Option 2 (see Table A1). This sample design includes a geographic breakdown similar to the sample design described earlier. The total number of targeted surveys under the Enhanced Sample Design is 1,190, which provides a maximum 10% margin of error at the 90% confidence level for each of the subgroups and a 2.4% margin of error (also at 90% confidence) for the overall sample. The Enhanced Sample Design would allow exploration of specific recycling and motivation questions to be reported with statistical accuracy, such as determining the relationship between recycling, unit age, and early versus regular replacement (see list item number 3, below).

Table A1: Participant Survey—Enhanced Sample Design

Rebate Status	Assumptions	Upstate	Downstate	Long Island	Sample Size Total
	Total Completed Surveys	560	560	70	**1,190**
Appliance Only					
	Option 1: ENERGY STAR Refrigerator	70	70	Unspecified	**140+**
	Option 1: ENERGY STAR Freezer	70	70	Unspecified	**140+**
	Option 1: ENERGY STAR Clothes Washer	70	70	Unspecified	**140+**
	Option 2 Appliances (bundle, CEE high efficiency refrigerator, clothes washer, dishwasher)	70	70	Unspecified	**140+**
Appliance with Recycling					
	Option 1: ENERGY STAR Refrigerator	70	70	Unspecified	**140+**
	Option 1: ENERGY STAR Freezer	70	70	Unspecified	**140+**
	Option 1: ENERGY STAR Clothes Washer	70	70	Unspecified	**140+**

	Option 2 Appliances (bundle, CEE high efficiency refrigerator, clothes washer, dishwasher)	70	70	Unspecified	**140+**
	Survey length				**20 minutes**
	Margin of error at 90% confidence level				**10% for each subgroup, 2.4% overall**

3. **Determine Relationship Between Recycling and Early or Regular Replacement and Estimate Energy Savings Associated with Recycled Appliances**

   In theory, consumers are more likely to recycle an appliance if it has reached the end of its useful life, as an appliance in good working condition may have value in the used appliance market. Incremental energy savings from the ARRA recycling incentives are anticipated to come from those who chose to recycle rather than re-sell their working unit, as those with non-working appliances may have disposed of them in another manner, and the unit would otherwise not be using energy. If the Enhanced Sample Design is funded (as described in item number 2 above), the Team can analyze this data with statistical confidence to estimate savings from appliance recycling.

RENEWABLE ENERGY

1. **Biomass Boilers**
   - Current action plan calls for metering three of the six installed boilers
   - Metering the additional three boilers would cost approximately $40,000
2. **Solar Water Heaters**
   - Current action plan calls for metering eight of the 25 systems to be installed
   - Metering the additional 17 systems would cost approximately $210,000
3. **Solar Space Heating**
   - Current action plan calls for metering five of the 11 systems
   - Metering the six additional systems would cost approximately $75,000

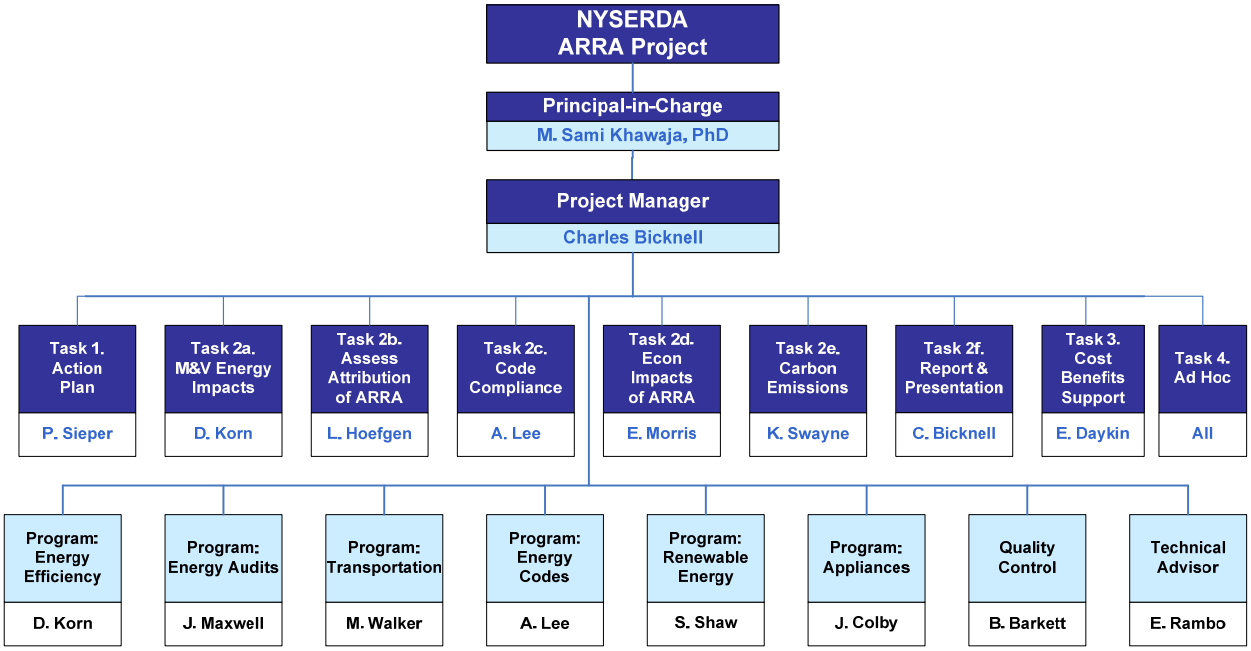
ENERGY EFFICIENCY AND CONSERVATION STUDY

1. For select applications, NYSERDA or the Cadmus engineer may express particular interest in combustion efficiency over time. If so, a logging combustion analyzer can be used. Likewise, if there is a particular need for direct gas sub-metering where no meter already exists, it can be installed. If the need for either combustion analysis or direct gas metering is identified, evaluators will present the benefits and extra costs to NYSERDA for consideration, but such tasks are not included in the existing M&V budgets. The cost for gas sub-metering could add approximately $5,000 per site.
2. Conducting an enhanced net-to-gross assessment, where the Team surveys multiple decision makers per project and use, can benefit from other information to help triangulate the reason(s) why a facility took a certain action. This would be beneficial—particularly for the PON 4 study. These interviews can be time consuming and can take several senior staff hours per facility in order to ensure that contextual answers are handled correctly. The cost of this approach for PON 4 would vary on the number of implementing sites, but would range between $400 to $500 per interview.

3. The original budget assumed that MAR work for PON 4 did not include site visits or M&V work. The rationale for this approach was that for audits conducted in 2010, actual project implementation might not take place until late 2011. Further M&V work often requires that the project be in place for several months, and even longer for billing analysis. We did not anticipate that there would be much to view on-site, and opted for an interview approach. If the timing and the amount of budget is flexible, then some projects may be installed and operational in time for the Team to visit them. The cost of performing site M&V work is similar to the work on RFP 10 and 1613; about $4,000 per site on average.

APPENDIX B
EVALUATION TEAM

Figure 9: Team Structure Matrix



BEACON CONSULTANTS NETWORK INC.

Mike Walker (*Transportation*) is president of Beacon Consultants Network Inc., a consulting firm specializing in effecting human behavior change. Beacon helps its clients create programs, products, and services that transform the way groups of people think and act. If your computer enters "sleep mode" to save energy, or if your employer offers commuter benefits, or if you've elected to become an organ donor online, you are already familiar with some of Beacon's work. Prior to founding Beacon, Mr. Walker served as COO of an IT services firm, Complete Communications, Inc., was VP of client services at Belenos, Inc., and a manager at Deloitte Consulting.

Emily Norton (*Transportation*) is a senior consultant with Beacon Consultants and has nearly 20 years of social marketing experience in the corporate, public policy, and political arenas, focused primarily on energy and the environment. She has developed considerable expertise in helping organizations adopt sustainable business practices. As a result of her work, major corporations are reducing their energy bills, driving cleaner cars, manufacturing more energy-efficient products, and purchasing fuel-efficient hybrid trucks.

THE CADMUS GROUP INC.

Dr. M. Sami Khawaja, (*Management*) is the principal-in-charge of the project. Dr. Khawaja is a vice president at Cadmus, overseeing the firm's Energy Services Group (formerly Quantec, LLC), which currently has a professional staff of over 130. Dr. Khawaja has more than 25 years of economic consulting experience, specializing in forecasting, market transformation assessment, pricing, cost/benefit

analysis, and statistical and quantitative analysis for utilities and government agencies. He is also a nationally-recognized leader of program design and evaluation methods.

Dr. Khawaja is well versed in commonly used sampling techniques in load research, including ratio-based sampling and model based statistical sampling. His extensive experience in statistical sampling design has ranged from simple random sampling for residential surveys to more sophisticated sampling design for quality control of large commercial and industrial programs.

In addition to being one of the authors of the International Performance Measurement and Verification Protocol (IPMVP), Dr. Khawaja co-authored the Program Impact Evaluation Guide for the public-private collaborative National Action Plan for Energy Efficiency. Earlier this year, he served as the lead author on the Impact Evaluation Guide for the Electric Power Research Institute.

An adjunct professor of economics at Portland State University, Dr. Khawaja teaches quantitative economics and statistics. He is one of the founders of the Applied Energy Economics and Policy graduate certificate program at Portland State.

Dr. Allen Lee, (*Energy Codes*) a principal with Cadmus, will be overseeing implementation of the EM&V activities outlined in the codes action plan. He will guide the resolution of any technical issues, provide high-level guidance on task completion, and review materials for quality control and adherence to the highest standards of evaluation protocols. Dr. Lee has more than 25 years of experience designing, managing, and providing technical leadership on a wide range of projects and programs involving energy policy, energy efficiency, renewables, environmental analysis, and sustainability. Dr. Lee has brought multidisciplinary expertise to challenging research projects for public and private sector clients and has been directly involved in formulating public policy. In addition, he has developed and managed evaluations of dozens of utility programs involving efficiency improvements in residential and commercial buildings, including several code program studies.

David Korn, CEM, (*Energy Efficiency*) a principal with Cadmus that has more than 20 years of experience in energy and environmental consulting and engineering, will oversee the impact and M&V of energy efficiency and energy conservation study areas. His expertise encompasses a broad range of energy conservation issues, ranging from preparing detailed technical evaluations of products (such as industrial transformers) to managing a multi-million dollar regional effort to promote energy-efficient products. Additionally, Mr. Korn has developed specifications for battery charging systems, dehumidifiers, water coolers, computers, and for the correct installation of air conditioning equipment. He has supervised the construction of cogeneration systems and performed energy audits on millions of square feet of buildings. Specializing in laboratory and *in-situ* metering, Mr. Korn and his engineering team have investigated the energy use of buildings and building systems in thousands of locations. They have also evaluated consumer products ranging from air conditioners, dehumidifiers, water coolers, computers, computer monitors, external power supplies, and battery charging systems. He currently serves on the technical committee overseeing the International Performance Measurement and Verification Protocol.

Dr. David Sumi, (*Carbon*) a principal at Cadmus, is the technical advisor for the carbon task. Dr. Sumi has more than 25 years of experience in evaluation and performance measurement research. Dr. Sumi's work focuses on energy efficiency, demand side management (DSM), and quantifying a range of impacts from DSM programs (such as direct energy, environmental, economic, and other non-energy benefits). His work has entailed managing research and evaluation projects (including several multi-year evaluation projects) for more than 30 utilities, energy research consortia, and government agencies. His experience encompasses coordination between measurement and verification protocols for energy-efficiency programs and the WRI Greenhouse Gas Protocol.

David Beavers, CEM, CSDP, (*Renewables*) is a senior associate at Cadmus. Mr. Beavers has more than 15 years of field and consulting experience related to engineering and energy. For the past eight years, he has led Cadmus projects related to solar development, quality assurance, and monitoring and verification studies for both public and private clients. Mr. Beavers' currently serves as the sole Third Party Meter Reader for tracking and verification of energy generated from PV sources used to claim Massachusetts Solar Renewable Energy Certificates; inspecting systems installed by new installers for compliance with electrical and building codes and other technical requirements, and serving as an owner's agent for communities wanting to install PV systems. Mr. Beavers will serve as a technical resource on solar PV, solar hot water, and solar thermal M&V.

Charles Bicknell, *(Management)* will be the primary day-to-day manager of the project and the primary point of contact for NYSERDA. Mr. Bicknell is a senior associate and is the deputy group manager of the energy services group at Cadmus. He has seven years of experience managing DSM projects and conducting evaluations of programs across the country. Mr. Bicknell's evaluation experience including previous evaluations of the SBC funded programs at NYSERDA and managing the evaluations of the 2006-2008 residential programs run by the Investor-Owned Utilities in California. In addition to program evaluations, Mr. Bicknell has managed program planning and potential studies, and prior to getting into the DSM field, developed financial models for an Investment Bank in New York.

Eli Morris, (*Macroeconomics*) a senior associate with Cadmus, has extensive experience in DSM potentials assessment, program planning, cost-effectiveness, and data analysis for electric and natural gas utilities. Mr. Morris has conducted in-depth analysis to quantify the various benefits of energy-efficiency programs, including the value of avoided energy and capacity, macroeconomic impacts, and other non-energy benefits. On this project, Mr. Morris will lead the effort to quantify macroeconomic impacts.

Elizabeth Daykin, (*Cost-Effectiveness*) a senior associate at Cadmus, specializes in program planning and statistical analysis. She conducts quantitative and qualitative data analysis for a broad range of projects, including program evaluations, benefit-cost analyses, impact evaluations, and potentials assessments. Ms. Daykin has worked with clients throughout the U.S. to model cost-effectiveness, leading the development of Microsoft Excel® and Web-based versions of analytical tools, such as DSM Portfolio Pro, for use in program planning and evaluation. In addition to her work with energy industry clients, Ms. Daykin has worked with clients in the financial sector on programs involving forecasting, market characterization, cost-effectiveness, and statistical modeling.

Jane Colby, (*Appliances*) the program manager for the Appliance Rebate Programs, is a senior associate with Cadmus and has over 20 years of utility industry experience. For Cadmus, Ms. Colby has managed numerous residential evaluation projects and portfolios using her extensive project management, energy engineering, and statistical analysis experience. She also has experience developing and negotiating complex power transactions involving power assets and long term contracts as well as wholesale electricity trading and integrated resource planning. She is uniquely skilled at conceptualizing, planning, and organizing research projects and at analyzing and presenting complex data. Ms. Colby will supervise the gross program impacts analysis.

Shawn Shaw, (*Renewables*) a senior associate at Cadmus, has over a decade of experience working with renewable energy projects and programs. Mr. Shaw will be managing the overall renewable energy program evaluation effort, providing management, technical guidance, planning, and reporting functions.

Dr. Stephen Jurovics, (*Energy Codes*) a senior associate with Cadmus, has 23 years of experience with building energy and environmental issues, and will be supporting the EM&V activities outlined in the energy code program action plan. He will identify the specific differences between the existing New York State residential and commercial energy code and the new residential code, IECC 2009, and commercial code, ASHRAE 90.1-2007. This work will support, in part, a review of the training materials being offered to code officials and building professionals, for completeness and accuracy. This work will also aid in the determination of energy savings arising from implementing this new ARRA-required energy code in December 2010, rather than at a later date.

Bill Falkenhayn, (*Energy Codes*) an associate with Cadmus, will be implementing the EM&V activities outlined in the energy code program action plan and will plan out the optimal course of action for completing the EM&V tasks. Mr. Falkenhayn will also ensure the budget meets expectations and will address project management issues on a day-to-day basis. Mr. Falkenhayn provides expertise in project management, program evaluation, and qualitative data analysis. He led an evaluation effort for the California Public Utilities Commission, where he managed internal staff while coordinating efforts of partner contractors and utility staff, to produce quantitative and qualitative analysis of Title 24 Building Codes. He also provides logic models, survey design, and data collection planning and analysis.

Charles McClelland, (*Renewables*) an associate with Cadmus, has extensive experience evaluating wind project sites, equipment, and wind resource. He has installed numerous 50m meteorological towers, as well as conducted design reviews, inspections, and feasibility studies for wind projects throughout New England. Mr. McClelland will lead the wind energy M&V aspects of the project.

Heidi Ochsner, (*Renewables*) an associate with Cadmus, is an environmental engineer with experience in managing projects and evaluating renewable energy and energy-efficiency programs. Ms. Ochsner is knowledgeable about the performance and greenhouse gas impacts of distributed generation technologies including PV, wind, solar water heating, and biogas-fueled and natural gas-fueled combined heat and power systems. She has collected and processed metered data, installed monitoring equipment, designed samples, and performed uncertainty analysis. Ms. Ochsner will provide technical input to M&V for a variety of technologies.

Jamie Lalos, *(Management)* an associate with The Cadmus Group, will be assisting with high-level project management and over-sight. Ms Lalos has more than eight years of experience in designing, marketing, and evaluating energy-efficiency programs. In addition, Ms. Lalos is assisting numerous utilities with their market research efforts as well as process and impact evaluations. Ms. Lalos joined Cadmus in 2008, after more than 6 years at the New York State Energy Research and Development Authority (NYSERDA), managing a variety of residential energy efficiency programs. In her role at NYSERDA, she managed comprehensive marketing plans and activities to increase residential energy efficiency program participation through increasing consumer awareness of energy efficiency and NYSERDA's program offerings. As part of the evaluation of residential efficiency program marketing, Ms. Lalos oversaw the development and implementation of consumer and trade ally focus groups to gauge the effectiveness of these efforts as well as test new creative and messaging. She also oversaw the process of redesigning residential outreach strategy and marketing materials.

Kate Swayne, (*Carbon*) an associate with Cadmus, will manage the carbon evaluation task for this evaluation. Ms. Swayne is an experienced project manager specializing in carbon and energy-efficiency projects including process and impact evaluations. Ms. Swayne has worked in the field of energy efficiency, renewable energy, climate change, and environmental protection for seven years. Ms. Swayne recently served as the project manager for a baseline greenhouse gas emissions inventory and climate evaluation for a $13 billion, global services firm.

Before joining Cadmus in 2008, Ms. Swayne worked for Marsh and McLennan Companies in Washington D.C. as a sustainability and climate risk consultant. In this position, Ms. Swayne focused on informing the development of a sound federal cap and trade policy as well as robust internal sustainability initiatives. Ms. Swayne also advised clients on a host of climate risk issues and served as a liaison to groups such as the United States Climate Action Partnership, International Emissions Trading Association, World Resources Institute, and the Climate Disclosure Standards Board.

Philip Sieper, (*Management*) an associate and experienced research and project manager at Cadmus. Mr. Sieper conducts quantitative and qualitative data analysis for a broad range of projects including program evaluations and market characterization studies. He has also managed project and data collection activities for various evaluation studies. Before joining Cadmus, Mr. Sieper was responsible for project, product, and research management, as well as quantitative and qualitative analysis. He has more than 12 years of experience in the energy industry, primarily in overseeing global research groups and products focused on electricity markets at Platts.

Thomas Doherty, (*Energy Audits*) an associate with Cadmus, has more than 10 years of experience in energy consulting and engineering. He is an expert in evaluating building systems and controls and in analyzing energy conservation measures to promote efficient systems operation. Mr. Doherty has extensive experience with the design review, installation, and operation of building mechanical and electrical systems– including chiller/boiler plants, HVAC systems, lighting, variable speed drives, and building automation systems.

Tony Larson, (*Energy Codes*) an associate of Cadmus, will be performing the engineering review of this project. Mr. Larson conducts research on energy-efficient building technologies and renewable energy systems. He has performed quantitative and qualitative analysis for several Cadmus projects, and has worked with engineering modeling applications such as eQUEST and ENERGY-10, and conducting site visits, telephone surveys, and interviews.

Crystal Weston, (*Energy Codes*) a senior analyst at Cadmus, has extensive program implementation, evaluation, and environmental consulting experience. Ms. Weston conducts qualitative and quantitative assessments, market research, cost-benefit analysis, and logic-model and performance measure creation for a variety of programs. Her primary role in this project will be to conduct qualitative and quantitative assessments, economic impact analysis, and logic-model and performance measure creation for programs. She will assist the evaluation of the energy code and standards programs by researching code implementation and impacts and analyzing data. She will evaluate the macroeconomic impacts of the ARRA programs, including utilizing economic impacts software. For process evaluations, Ms Weston will work with program managers to create logic models that will inform the process and impacts evaluations.

Danielle Kolp, (*Renewables*) a senior analyst and project manager at Cadmus, has five years of experience with data analysis and project management. At Cadmus, Ms. Kolp has performed numerous impact and process evaluations, cost-effectiveness analyses, and program planning projects. She also has extensive experience with several renewable technologies, specifically dealing with PV system technical specifications, policy issues, program planning, and incentive level structures. Ms. Kolp will be overseeing various evaluation tasks and conducting portions of the technical evaluation activities.

Dr. Cynthia Kan (*Macroeconomic***)** is a senior analyst with Cadmus. She specializes in energy-efficiency planning activities, and she contributes technical inputs for use in conservation potential modeling. Dr. Kan's evaluation services include process and impact analysis that covers standard energy-efficiency programs, as well as leading edge programs on emerging energy-efficiency financing strategies and education. In support of these projects, she benchmarks best practices, maps processes, develops verification protocols, and analyzes macroeconomic impact (such as job creation). Dr. Kan will oversee the macroeconomic impact analysis for the Team.

Michelle DePasse, (*Appliances*) a senior analyst with Cadmus, will be performing corporate retailer interviews and analysis of NYESP program data. Ms. Depasse has over 10 years of experience in construction management and green buildings, in addition to research and training experience.

Anna Carvill, *(Management)* an analyst with the Cadmus Group Inc., will be assisting with overall project management and organization. Ms. Carvill has experience with project management, data collection and analysis, data research, and reporting. Since joining Cadmus, Ms. Carvill worked with a west coast public utility commission, one of the firm's largest clients, and has played key management roles in several impact and process evaluations in California, Colorado, Utah and Massachusetts.

Brian Shepherd, (*Appliances*) an analyst with Cadmus, will be involved with data analysis for the Appliance Rebate Programs. Mr. Shepherd analyzes data in SAS for various rebate program evaluations as well as measure audit data.

Kate Bushman, (*Cost-Effectiveness*) an analyst with Cadmus, performs quantitative and qualitative analysis for complex energy-related projects. At Cadmus, she has applied her skills to process and impact evaluations of energy-efficiency programs in the residential, commercial, and industrial sectors. Ms. Bushman has conducted detailed cost-effectiveness analysis using DSM Portfolio Pro for numerous gas and electric utilities, and recently completed an assessment of a $50 million portfolio of programs spanning three states.

Scott Davis, *(General)* a senior analyst at The Cadmus Group Inc., will be assisting the management team with data organization and management. Mr. Davis has a multidisciplinary background in engineering, and has worked in the energy industry since 2007. He provides technical, analytical, and research skills to a variety of energy-related projects. He has managed large datasets, designed demand response and energy-efficiency plans, and provided his engineering skills in the field.

ERS, INC.

Jonathan Maxwell (*Energy Efficiency*) is a director and principal engineer at ERS, Inc. with more than 15 years of experience in energy-efficiency program evaluation and implementation. He has managed major field data collection efforts for evaluation and load research and has trained more than 200 energy professionals on a wide variety of topics, mostly related to field data collection and analysis. Mr. Maxwell has conducted more than 100 C/I site visits and led start-up, hiring, training, and daily project management for four energy audit programs that provided a combined 1,600 audits per year to utility customers. He also directed four industrial compressed-air program design and evaluation and market potential studies in New England and New Jersey.

NAVIGANT CONSULTING

Brent Barkett (*Quality Control*) is a director at Navigant. He has more than 10 years' experience in the utility and energy industries. Mr. Barkett has examined the cost-effectiveness and energy savings and demand reductions associated with various energy-efficiency and demand response programs. For the past five years, Mr. Barkett has served as the chair of the Association of Energy Services Professionals'

Pricing and Demand Response Topic Committee. Mr. Barkett will provide quality assurance and quality control for the Team.

Frank Stern (*Renewables*) is a director at Navigant. His focus is on helping organizations make wise choices about energy resources. He has over 20 years of experience in a variety of areas in the energy industries, including renewable energy, climate change policy analysis, demand-side management program evaluation and planning, generation asset and contract valuation, and competitive bidding resource selection. Mr. Stern led a team to provide technical and analytical support to NYSERDA in the evaluation of the New York State Renewable Portfolio Standard with regard to assessments of market conditions.

Jane Pater Salmon (*Carbon, Renewables*) is an associate director with Navigant. Her work focuses on strategic planning, market assessment, the intersection of business and policy, and the diffusion of innovation. Ms. Salmon has worked on greenhouse gas inventories for the Philippine government, both as a Fulbright Scholar and for major corporations. She is published in peer-reviewed proceedings on the role of energy efficiency in greenhouse gas cap and trade schemes. Ms. Salmon worked with the National Renewable Energy Laboratory to explore the interaction of greenhouse gas regulatory systems and green power marketing efforts. In addition, Ms. Salmon developed a strategy for a major global energy firm to reach carbon neutrality.

Stu Slote (*Energy Code*) is an associate director with Navigant and was formerly a senior consultant with Summit Blue. He has over 25 years of experience in the energy-efficiency industry. His areas of expertise include building energy code development, adoption, implementation, and assessment; screening, assessment, and promotion of efficiency markets and measures; and the design, implementation, and evaluation of utility demand side programs.

Fred Wellington (*Carbon*) is a managing consultant in Navigant's energy practice, where he specializes in clean energy strategy. Most recently, Mr. Wellington has advised investor and publicly-owned utilities on strategic clean energy issues such as rooftop solar business models and opportunities, compliance options and costs associated with renewable energy and GHG policies, REC valuation and trading, and carbon markets. He also has experience modeling potential greenhouse gas compliance costs under various cap and trade policy proposals and has worked with several government agencies on clean energy policy formation and implementation. Mr. Wellington has authored several publications on clean energy topics, including article which have been published in Harvard Business Review and Public Utilities Fortnightly.

Michael Sherman (*Energy Efficiency*) is a managing consultant with Navigant. He has more than 20 years' experience in energy efficiency in the public and private sectors, including policy and legislation development, regulation, program planning, and evaluation. Mr. Sherman has led multiparty and multidisciplinary stakeholder groups to optimal, efficient solutions. He has led process and impact evaluations of residential, low income, commercial, and industrial energy-efficiency programs. Mr. Sherman determined net-to-gross impacts due to market effects for Wisconsin's Focus on Energy. He has particular expertise in process evaluation and in all aspects of energy-efficiency programs for low income households. Previously, as director of energy-efficiency programs in the Massachusetts Department of Energy Resources, he led a Massachusetts planning process resulting in the design and implementation of a $2.1 billion, three-year plan for utility energy-efficiency programs.

NMR GROUP

Dr. Lynn Hoefgen (*Attribution*) is president of NMR. He has over 25 years experience in energy-related evaluation and market research. Dr. Hoefgen has been a key member of the team that has helped NYSERDA coordinate and supervise other evaluation contractors, has helped write NYSERDA's annual program evaluation and status report for several years, and set up a system to track indicators of program

success. Recently, Dr. Hoefgen has led various projects assessing approaches to determining attribution and net savings and has spearheaded efforts at implementing innovative approaches to measuring net-to-gross ratios for residential appliances, lighting, and energy code and standards. Dr. Hoefgen is serving as the principal-in-charge of the attribution and net savings efforts for the Team.

Dr. Greg Clendenning (*Attribution, Renewables*) is a senior project manager at NMR. Dr. Clendenning has extensive experience in the use of quantitative and qualitative research techniques and in monitoring and evaluating energy-efficiency and renewable energy programs. Dr. Clendenning's evaluation research experience includes clean and renewable energy, residential lighting and appliance programs, commercial lighting, residential housing programs, and branding issues. He previously performed a market conditions assessment of NYSERDA's Renewable Portfolio Standard Program. Dr. Clendenning will be serving as the renewable energy attribution task manager.

Dr. Lisa Wilson-Wright (*Attribution*) is a senior project manager with NMR. She has extensive experience in the use of quantitative and qualitative research techniques to help inform energy efficiency, clean energy, and environmental policy. This includes conducting multivariate regression analysis, survival analysis, and billing analysis using PRISM. She has also designed and administered surveys, conducted in-depth interviews, and analyzed qualitative data. Dr. Wilson-Wright will oversee attribution and net savings efforts for the Team.

Susan Oman, (*Attribution, Appliances*) a senior project manager at NMR, has over 20 years of experience in the energy industry. She has worked extensively on projects relating to energy efficiency and renewable energy, with particular expertise in energy-efficient lighting programs and technologies. Ms. Oman has conducted a range of market research and market evaluation projects in the residential, commercial, and industrial sectors, including extensive research into appliance rebate and retirement programs. Ms. Oman will be serving as the appliances attribution task manager for the Team.

Thomas Mauldin (*Attribution, Energy Code*) is a senior project manager at NMR. He has managed program evaluation studies, market assessments, and implementation programs throughout his eleven years in the energy efficiency field. Mr. Mauldin has conducted studies regarding a wide variety of energy technologies, including residential lighting, appliances, and homes, as well as commercial motors, HVAC, and new construction. These studies have included in-depth interviews, telephone surveys, and on-site field inspections conducted with a variety of groups, including manufacturers, retailers, architects, engineers, contractors, businesses, residential customers, and program staff. Mr. Mauldin will be serving as the energy code attribution task manager.

David Filiberto (*Attribution, Renewables*) is a project analyst with NMR with expertise in the fields of environmental policy analysis and economics. He has developed innovative, community-based approaches to survey design, and prepared reports for diverse clients, including NYSERDA, addressing energy efficiency and renewable energy programs, guidelines for consistent reporting of evaluation M&V results, and community planning. He has deep knowledge of carbon markets, energy, water resources, and climate change-related disease and is a published author on climate change, energy policy, and renewable energy. Dr. Filiberto will be serving as the energy conservation studies attribution task manager and will also assist in the attribution assessment of the transportation and energy-efficiency programs.

Abt SRBI

Abt SRBI Inc. is a national survey research organization with headquarters in New York City and offices in Florida, Maryland, New Jersey, North Carolina, Georgia, greater Cincinnati, West Virginia, Tennessee, and Arizona. As a full-service survey research organization, Abt SRBI provides a wide range of support services, from focused group discussions, to developing questionnaires, to performing multivariate analysis of survey results.

Interviews for this project will be conducted from Abt SRBI's telephone center in New York City. Abt SRBI operates five telephone research centers, in New York City, New York; Fort Myers, Florida; West Long Branch, New Jersey; Huntington, West Virginia; and Hadley, Massachusetts. Together, Abt SRBI has more than 500 telephone interviewing positions and a staff of 600 experienced telephone interviewers. All interviewing positions are equipped for computer-assisted telephone interviewing and are continuously monitored for quality control. In addition to conducting interviews with consumers, Abt SRBI has an experienced corps of executive interviewers who are skilled in completing interviews with difficult to reach business customers. At least 15% of all interviews are silently monitored for quality control purposes and all interviewers are thoroughly trained and continuously evaluated.

Abt SRBI has been conducting evaluation and market research projects for clients in the energy industry since its founding in 1981. Its experience includes telephone surveys of residential and commercial/ industrial customers regarding a variety of energy conservation and efficiency topics (CFLs, appliance purchases and sales tracking, new construction, ENERGY STAR, HVAC retrofits, mobile homes, and energy audits).

Lisa Haislip will supervise the interview and survey data collection efforts for the Team.

Lincoln Wood will head the interview and survey data collection efforts.

Appendix D:

WHITE PAPER

"The Trouble with Freeriders – The debate about freeridership in energy efficiency isn't wrong, but it is wrong headed," by Hossein Haeri and M. Sami Khawaja.

The Trouble with Freeriders

The debate about freeridership in energy efficiency isn't wrong, but it is wrongheaded.

By Hossein Haeri and M. Sami Khawaja

The energy efficiency programs administered by California's investor-owned utilities reported 6,500 GWh of electricity and 84 million therms of natural gas savings for the three-year program cycle from 2006 to 2008. Yet valuations of these programs later credited the utilities for less than two-thirds of the electricity and slightly more than just one-half of the natural gas savings the utilities claimed. The rest—2,400 GWh and 40 million therms, to be exact—was claimed by freeriders.

And for the next three-year program cycle, from 2010 to 2012, California utilities appear set to invest $3.1 billion from 2010 to 2012 to meet the saving targets, 6,965 GWh and 153 million therms, approved by the California Public Utilities Commission (CPUC).[1] However, if things go as they did before—and indications are that they might—much of these savings will again go to freeriders.

Investment in energy efficiency has been growing rapidly throughout the United States. In a recent report, the Consortium for Energy Efficiency (CEE) estimated that spending on ratepayer-funded energy efficiency programs was $5.3 billion in 2009, with planned expenditures of 6.6 billion in 2010.[2] More than 50 percent of the expenditures were concentrated in California, New York, Massachusetts, and the Pacific Northwest—a group of states that accounts for 20 percent of U.S. electricity and natural gas consumption. Expenditures are also growing geographically, as the number of states offering energy efficiency programs has increased from 37 to 46 in just the past three years.

This trend is likely to continue for at least the near future. Energy efficiency resource standards with aggressive saving targets are in effect in 26 states and probably will be put into place in more states through legislative action, regulatory mandates, or voluntary goals. Program administrators in these states are accelerating their programs to meet mandated saving goals. As these programs expand and investments in them increase, so will concerns about how freeriders factor into success and compliance metrics. And mechanisms for performance risk and reward appear even more controversial.[3] As a result, freeridership likely will continue playing a prominent part in the regulatory and policy discourse about ratepayer-funded conservation.

Signs suggest a coming shift in the focus in energy efficiency, from energy resource planning to greenhouse gas emission reductions. As the goals of the two policies converge, questions arise about how to track and appropriately credit energy savings attributable to a myriad of different programs, such as 1) the regional greenhouse gas initiatives, 2) regional market transformation initiatives, 3) the federal *American Recovery and Reinvestment Act* (ARRA), 4) state tax policies to promote energy efficiency, and 5) local stimulus funds earmarked for energy efficiency and creation of green jobs. Such questions will only intensify the debate over freeridership, and about monitoring and attributing savings.

The Origin of the Species

Freeridership is a long-standing issue in all areas of social science that involve public policy. Russell Hardin, in the *Stanford Encyclopedia of Philosophy*, traces the origins of the concept to *Plato's Republic* and points to references to it in the works of the 18th and 19th century political philosophers, including David Hume and John Steuart Mill, among others. As Hardin points out, despite this widespread recognition, it wasn't until 1965 that the concept of freeridership and its implications for public policy were systematically formulated by Mancur Olson in his *Logic of Collective Action*. [4]

With ratepayer-funded conservation, freeridership is probably less about fairness and more about economics.

Olson's analysis was based on Paul Samuelson's theory of public goods. Samuelson, in 1954, noted that some goods, once they're made available to one person, can be consumed by others at no additional marginal cost.[5] This condition, called "jointness of supply" or "non-rivalrous consumption," refers to situations where consumption of a good by one person doesn't affect others' consumption of the good. In other words, the good, once provided for anyone, "is *de facto* provided for everyone in the relevant area or group."[6]

A second distinctive feature to Samuelson's theory of public goods is the impossibility of exclusion: Once a public good is supplied at all, excluding anyone from its consumption is supposedly impossible.[7] This attribute gives rise to freeridership, whereby some individuals either consume more than their fair share of a common resource, or pay less than their fair share of its costs. In certain cases, individual consumers may reap benefits without paying for them.

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A compelling case exists that some goods are both joint in supply and non-excludable—the so-called "pure public goods," such as clean air. But ratepayer-funded energy efficiency programs don't fit this category, at least not closely, for they lack both of the defining features of a public good. They are hardly non-rivalrous, as there have been many cases of budget constraints prohibiting some eligible consumers from participating in a program. Nor are they non-excludable, since utilities routinely set eligibility criteria for participation, and enforce those criteria when possible.

Indeed, the logic of public goods is of little practical relevance in the context of ratepayer-funded energy efficiency. In these cases, freeridership refers to program participants who presumably would have conserved regardless of the program. These consumers are presumed to be predisposed to conservation; they practice efficiency whether or not any incentives are available. As such, they're the opposite of what Samuelson would have considered freeriders: people unwilling to pay for a good while enjoying its benefits. Early adopters of energy efficiency and renewable technologies are a case in point.

Cause and Effect

The fundamental problem with freeridership in energy efficiency is attribution; that is, whether and to what extent the observed change in energy consumption or the adoption of an energy-efficient product is likely to have been triggered by a program. And the problem is by no means peculiar to energy efficiency. It arises in many policy areas, whenever economic agents are paid an incentive to do what they might have done anyway. The problem is inherent, for example, in the additionality requirement, which is the defining characteristic of the CO_2 offset concept established by the clean development mechanism (CDM) of the Kyoto Protocol. The mechanism, which is now the world's largest greenhouse gas emissions offset scheme, is intended to validate and measure impacts from projects to ensure that they produce authentic benefits and are genuinely additional activities that wouldn't otherwise have been undertaken.

In energy efficiency, freeridership factors into the calculation of a program's impacts as the ratio of savings attributable to the program (net savings) and the savings expected to be achieved according to planning assumptions (gross savings). The result is the net-to-gross (NTG) ratio.[8]

For utilities administering ratepayer-funded programs, the implications of NTG calculations can be large and wide-ranging. The calculations affect nearly all essential criteria that define and determine performance, particularly saving claims and cost-effectiveness. Uncertainty arises because the NTG ratio usually isn't known until well after a program has been implemented. Utilities become exposed to financial risks, particularly in jurisdictions where performance standards include penalties for under-performance (*e.g.*, Pennsylvania, New York, and Washington), provisions for lost-revenue recovery (*e.g.*, Nevada and North Carolina), or shareholder incentive (*e.g.*, California and New York).

For these reasons, the concept of freeridership has been a uniquely charged topic, eliciting frustration and disagreement among energy-efficiency policy makers, program administrators, and evaluation experts. Despite years of research, no commonly held or precise understanding has been established of what NTG means, what it includes, how best to measure it, and what to do with the results once the measurement is done. In fact, its very definition isn't firmly settled *(see "From Gross to Net.")*

Freeridership, and the broader concept of NTG, remain, in the words of William Saxonis, a regulator in New York, a "regulatory dilemma."[9]

Freeridership remains the most common criticism of ratepayer-funded energy efficiency among the skeptics,[10] along with the so-called rebound effect (the notion that greater efficiency leads to increased consumption due to an income price effect) and persistence of savings. The debate over these topics dates back to the mid-1980s, when energy efficiency consisted of what were, by today's standards, small-scale conservation programs focusing mostly on residential weatherization. Citing freeridership as an argument against public intervention in energy-efficiency markets, the critics of ratepayer-funded conservation argued that the presence of freeridership overstates the energy-savings potential of conservation programs and understates their actual cost, distorting resource choices.

Skeptics have criticized ratepayer-funded conservation on the grounds of distributional concerns arising from the potentially adverse rate impacts.[11] Because freeridership is correlated with the level of financial incentives available to the participant, the reasoning goes, if incentives are too high and the participant isn't expected to commit his or her own money to the effort, freeridership will go up, reducing the effectiveness of the program and leading to higher average rates for consumers, particularly those who don't benefit from the program.[12]

This argument sounds right, but is wrong. Free riders in energy efficiency programs tend to be those willing to adopt a measure with low (not high) incentives, relative to a measure's incremental cost. These are the consumers who most likely would have adopted the energy efficiency on their own. This negative correlation between freeridership and incentives was amply demonstrated in a recent study in Washington. The study surveyed about 350 consumers who had participated in eight conservation programs that offered different levels of incentives. Participants were asked a number of questions on why they took part in these programs. Based on their answers, each respondent was assigned a freeridership score. A comparison of these scores with the incentives received by the respondents showed a strong

From Gross to Net

Freeridership—and the general issue of attributing observed results to program implementation—has long been recognized as a problem in ratepayer funded conservation. The problem is discussed thoroughly in early manuals for impact evaluation of conservation programs by the Oakridge National Laboratory[1] and the Electric Power Research Institute.[2]

Conceptually, freeridership reflects an aspect of self-selection bias, a problem in voluntary programs under which participants may be propelled to adopt conservation measures by factors unrelated to a conservation program.

That places a premium on how NTG is defined, the net-to-gross ratio—the ratio of savings attributable to the program (net savings) versus the savings expected to be achieved according to planning assumptions (gross savings).

But no consensus exists on what NTG means and what its elements are. The lack of a common perspective was amply demonstrated in a 2010 scoping study sponsored by the New England Energy Efficiency Partnership (NEEP).[3] The study started with a survey of local experts in energy efficiency, asking them apparently simple questions: What are "net" savings? What are the elements of NTG? What's the proper role of NTG in program evaluation? How should it be measured and what would be the appropriate amount that should be invested in measuring it?

It turns out that none of these questions has an obvious or easy answer. The study concluded that, even within a region with one of the longest histories of energy conservation, "the definition and measurement of net energy savings remains a controversial issue." Even more surprising is that the experts could not even agree on whether more consistent definitions and measurement approaches were needed or even desirable. The lack of consensus was echoed in a 2007 survey of 20 energy efficiency program planners, implementers, and evaluators, carried out for the California Evaluation Outreach Initiative under the auspices of CPUC.[4] –***HH and MSK***

Endnotes:

1. *Handbook of Evaluation of Utility DSM Programs*, ORNL/CON-336, Oak Ridge National Laboratory, December 1991.
2. *Impact Evaluation of Demand-Side Management Programs, Vol. 1: A Guide to Current Practice*, EPRI CU-7179, Electric Power Research Institute, Palo Alto, Calif., February 1991a.
3. *Evaluation, Measurement, and Verification Forum, Northeast Energy Efficiency Partnerships (NEEP), Net Savings Scoping Paper*, Prepared by NMR Group and Research Into Action, November 2010.
4. *Survey of Energy Efficiency Evaluation Measurement and Verification (EM&V) Guidelines and Protocols and Gaps and Needs*, Schiller Consulting, Prepared for The California Evaluation Outreach Initiative, May 2007.

negative correlation between ridership and incentives.[13]

An element of equity does come into play in ratepayer-funded conservation. Any disparity between how benefits and costs are distributed among customers is important; If a customer enjoys the benefits of conservation, one might wonder why the bill for those services should be divvied up and sent to his neighbors, especially if he was willing to pay for them. However, in the context of ratepayer-funded conservation, freeridership is probably less about fairness and more about economic efficiency.

The economic efficiency argument was first formulated systematically in 1992 by Paul Joskow and Donald Marron.[14] In their analysis of data on 16 utility-sponsored conservation programs, the authors identified freeridership as one of the most important issues in determining the costs and valuing the benefits of conservation programs. The particularly remarkable aspect of the study was its characterization of freeridership as a dynamic problem. The problem, they argued, derives from the fact that freeridership isn't limited to consumers who would have adopted energy-efficiency measures without the utility program, but also involves consumers who are likely to adopt the measures in the future.

From this perspective, a conservation program merely speeds up the adoption of energy-efficiency measures and increases the maximum penetration the measures are likely to achieve. Freeridership, therefore, isn't merely a question of "*whether* some of this year's participants would have adopted a conservation measure absent the utility's program, but *when* they would have adopted the measure."[15] Thus, if all of the participants would have installed the measure at some point in the future whether the program existed or not, "the static approach significantly overstates the actual savings of the program." The failure to account for such dynamic diffusion effects, they argue, results in overestimating the savings and underestimating the cost of conservation.

This argument is true, but only partly. Rather, it only applies to programs involving a retrofit—replacing functioning equipment with more efficient equipment. It doesn't apply to programs that offer incentives for replacement of equipment on burnout, a significant part of today's portfolios of ratepayer-funded programs. In these cases, if the failed appliance isn't replaced with an energy efficient one at the time of its replacement, the opportunity to do so will be lost for the course of the equipment's useful life.

The argument is also one-sided. It places the emphasis on the acceleration component of diffusion and ignores the potentially large effects of conservation programs on shifting the curve. What if the services offered under a program induced participants to take further conservation actions? What if they encouraged other consumers to adopt conservation measures without taking advantage of the program's incentives? They might take action because the program changed their perceptions about the benefits of conservation, or because the increase

in demand induced a shift in supply, making energy-efficient products more available.

These behavioral effects on participants (participant spillover) and consumers in general (non-participant spillover or market transformation), although they're hard to quantify, can be sizable. Joskow and Marron recognized the validity of this proposition, but didn't explicitly account for these effects in their analysis.

Motivation and Social Desirability

A variety of methods have been used to either measure or account for freeridership. These methods fall into one of two general categories. The first is the general difference-in-differences approach, which involves comparing actual energy consumption of participants before and after they participate in a program to change consumption among a comparable group of non-participants in the same period.

Implemented properly and with a well-chosen comparison group, this quasi-experimental research design produces reasonably reliable results for net savings, but doesn't provide separate estimates for the components of NTG, freeridership, spillover, and market transformation effects, individually. The method is often implemented using regression-based techniques to control for residual difference between the two groups, evaluate the sensitivity of savings to various factors, and estimate savings for individual measures for programs that bundle measures.

The main limitation of this approach is that it isn't well suited for measuring savings for programs involving large commercial and industrial consumers. These consumers tend to be unique in many ways, identifying a comparable group of non-participants is often impractical. Savings, relative to total consumption, may also tend to be too small to measure against the many unpredictable factors that affect energy consumption of these consumers. It's also less effective in new construction programs, where the lack of pre-program data doesn't allow a complete comparison.

The second, and by far the more commonly used, group of methods rely on "self-report." At a basic level, self-report involves asking participants a series of questions about what they would have done in the absence of the program. Responses are then scaled, weighted, and combined to produce a composite freeridership score (or index) for each respondent. The scores for individual respondents are then weighted (by their savings) and averaged to produce a program-level freeridership fraction.

The obvious limitation of the self-report approach is that it doesn't produce an NTG ratio. Other components of NTG—spillover and market transformation effects—have to be estimated separately and then factored into the calculations. But eliciting reliable information about intentions and motivations can be thorny.

Using surveys to assess freeridership also raises concerns about response bias, particularly those biases involving social desirability, which is the tendency of respondents to gauge their responses to conform to socially acceptable values. This issue is well recognized in social sciences, and it's discussed in a vast body of academic and professional literature, including conservation program evaluation manuals.[16]

One aspect of social desirability is the tendency of respondents to offer what they think is the right answer, and this tends to result in an overstatement of freeridership. Also, as some evaluation experts have noted, people have internal reasons as explained by social psychology's attribution theory that motivate them to make certain decisions and to follow a cognitive process for justifying those decisions.[17]

Survey design practices have improved, and sophisticated ways of designing questionnaires promise a more nuanced way of eliciting information more reliably. Instead of simply asking what participants would have done in the absence of the program, multiple questions probe respondents about timing (would they have adopted the measure at the same time), amount (would they have adopted the measures in the same quantity), and level (would they have adopted the measures at the same level of efficiency).

Freeridership is a long-standing issue. The *Stanford Encyclopedia of Philosophy* traces the concept to *Plato's Republic*.

What questions to ask, what kind of scale to use for recording responses, what weights to consider appropriate, and how to apply the final scores are decisions that expose the analysis to subjective judgment.[18] This problem could make the analysis a subjective exercise, open to constant dispute. Different evaluations of similar programs conducted by analysts using seemingly similar methods have produced drastically different results. The use of surveys for determination of spillover effects, for participants or non-participants, is especially sensitive to variances in spillover scores. Small fractions multiplied by very large numbers of customers can dramatically boost the savings.

Another—and less tractable—aspect to response bias is construct validity, which raises questions about what the survey results actually measure. The problem stems from the fact that survey respondents are naturally predisposed to conservation; After all, they are program participants. Thus, it remains far from clear whether their responses are conditioned by the effects of the conservation program itself.

The survey results would overstate freeridership because the survey may be asking the question from the wrong people: those identified as freeriders are, in fact, exactly the type of participants

program administrators would want for a program.[19] What's being measured, it appears, are the effects of the program—not what would have been expected in its absence.[20] In areas with long histories of conservation programs and activities, it's no longer possible to parse out who is a freerider and who was influenced by the program.

Could it be that, in the case of such transformed markets, what's being measured in freeridership surveys is in fact the opposite: spillover?

Considerable practical matters limit the usefulness of self-report as a means of eliciting information about freeridership in upstream, mass-market programs, where it might not be possible to identify participants, let alone freeriders, because consumers might not be aware that the price they pay for a product includes a utility discount. This happens routinely in programs that offer point-of-sale incentives for products such as compact fluorescent light bulbs.

The use of self-report is even more problematic in the large commercial, industrial, and new-construction sectors, where investment decision-making processes are complex and finding the right people to survey is rarely easy. Using the method is even more problematic in upstream programs deployed through retailers, where purchasing and stocking decisions can be especially complex, particularly in chains, where decisions tend to be made centrally and based on competitive considerations.

Self-report remains the most common method for determining freeridership. The approach has been defended by its protagonists as a transparent and appropriate approach for evaluating complex and diverse programs and markets.[21] They have argued that the method's shortcomings are mostly a matter of misunderstanding and misapplication,[22] and that the noted biases are readily addressed through improved survey design, better scaling algorithms, and analytic techniques.[23]

A report produced by an independent evaluator in 2006, summarizing the results of recent programs in California, noted that "the issues of identifying freeriders are complicated and estimating reliable program-specific freeridership is problematic at best."[24] One year later, the California Public Utilities Commission formed a working group of experts to explore ways to improve the self-report method and produce standardized questionnaires to collect the data and algorithms to analyze them consistently. The result was 17 recommendations that were largely useful but somewhat too general to address the fundamental shortcomings of the approach.[25]

A 2011 study commissioned by the Association of Energy Efficiency Program Administrators in Massachusetts developed survey instruments to assess freeridership and spillover in the commercial and industrial sectors. These instruments go a long way toward standardizing the data collection, scoring, and analytic steps.[26] The study concludes that the self-report techniques are "based on sound methodologies and are consistent with analytical methods used in the social sciences." But the study doesn't satisfactorily address the essential questions of response bias.

Baseline and Spillover

Related to the measurement problem is an idea advanced by some energy-efficiency planners. Freeridership, they say (and NTG, too), is essentially a question about baseline. "Counterfactual" is another way to put it: that is, the conditions that might have existed in the absence of a program.

As the argument goes, if actual market conditions, instead of hypothetical conditions based on codes and standards, were used as the basis for calculating expected savings of conservation measures, the resulting estimates would then need no further adjustment.

Using surveys to assess freeridership raises concern about bias — especially involving social desirability.

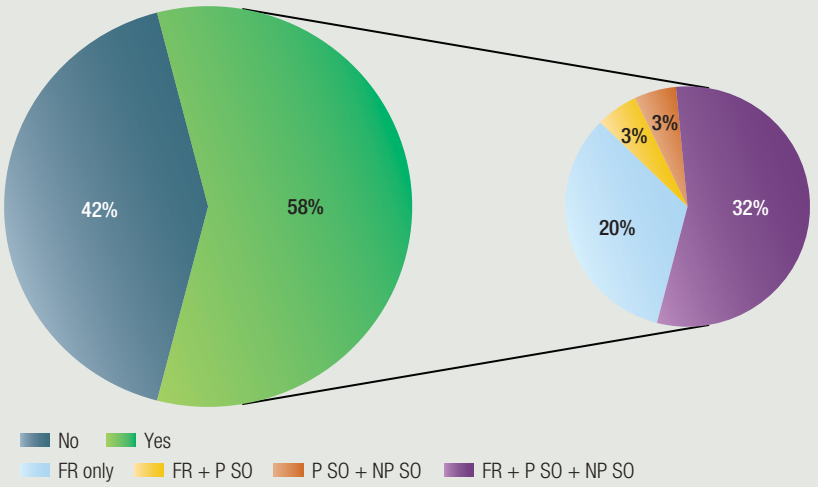
True enough, the concepts of NTG and baseline are linked. The actual penetration of conservation measures is a reasonably strong indicator of what might have happened in the absence of a program—but only for a planned program. It doesn't address the question of attribution in *ex post* evaluation of existing programs, because the observed market conditions also reflect not only a program's known direct impacts, but also the effects it might have induced—in other words, spillover. Disentangling what might have occurred in the absence of a program from the program's spillover effects is practically impossible in most cases. The longer a program operates, the more biased the estimates of freeridership are likely to be.[27]

Policy Differences, State by State

The definition, measurement, and treatment of freeridership, and NTG in general, vary across jurisdictions in the U.S. Some jurisdictions include both freeridership and spillover in their definitions of net savings, while others allow only freeridership to be counted. In several cases, freeridership and spillover are measured separately and incorporated in NTG, while other jurisdictions estimate NTG without specifying freeridership and spillover individually. In the majority of cases where NTG is required, it's applied only prospectively for planning and improving program design.

A review of practices in 31 jurisdictions with active energy efficiency programs illustrates this variation. All but six of these jurisdictions (82 percent) have energy efficiency resource standards (EERS) in place, setting minimum performance requirements.[28] Remarkably, documents and reports are lacking on NTG or how

FIG. 1 TREATMENT OF FREERIDERSHIP AND SPILLOVER BY JURISDICTION



Source: The Cadmus Group

Different states take different approaches to defining, measuring, and accounting for freeridership and program result assessments in general. Some jurisdictions calculate both freeridership and benefit spillover in their definitions of net savings, while others count only freeridership.

Notes: FR = freeridership; P SO = participant spillover; NP SO = non-participant spillover; EERS = energy efficiency resource standards.

		Spillover		
Jurisdiction	EERS	Participant	Non-Participant	Freeridership
Arizona	Yes	No	No	No
Arkansas	Yes	Yes	Yes	Yes
California	Yes	Yes	No	Yes
Colorado	Yes	No	No	Yes
Connecticut	Yes	Yes	Yes	Yes
Delaware	No	No	No	No
District of Columbia	No	No	No	No
Florida	Yes	Yes	Yes	Yes
Hawaii	Yes	No	No	Yes
Idaho	No	No	No	No
Illinois	Yes	Yes	Yes	Yes
Indiana	Yes	No	No	Yes
Iowa	Yes	No	No	No
Maine	Yes	No	No	Yes
Maryland	Yes	No	No	No
Massachusetts	Yes	Yes	Yes	Yes
Michigan	Yes	No	No	No
Minnesota	Yes	No	No	Yes
Nevada	Yes	No	No	Yes
New Hampshire	No	Yes	Yes	No
New Jersey	No	No	No	No
New York	Yes	Yes	Yes	Yes
North Carolina	Yes	No	No	No
Ohio	Yes	No	No	No
Oregon	Yes	Yes	Yes	Yes
Pennsylvania	Yes	No	No	No
Texas	Yes	No	No	No
Utah	No	Yes	Yes	Yes
Vermont	Yes	Yes	Yes	Yes
Washington	Yes	No	No	No
Wisconsin	Yes	No	No	Yes

it's treated in different jurisdictions. For many jurisdictions, this information must be gleaned from multiple sources, such as regulatory filings and evaluation reports. Indeed the authors' research couldn't determine with certainty the requirements for calculating and reporting NTG in several jurisdictions.

The available information shows that 13 of the jurisdictions (42 percent) have no NTG requirements. 18 jurisdictions (58 percent) include freeridership in determination of NTG, and in seven of these jurisdictions freeridership is applied at the energy efficiency measure level. In six jurisdictions (20 percent) only freeridership in accounted for. Participant spillover is measured in 12 jurisdictions (37 percent) and in 10 cases (32 percent) NTG calculations include all three effects *(see Figure 1)*.

The high proportion of cases where only freeridership is assessed suggests an asymmetrical treatment of spillover and freeridership effects. Should spillover be included, it's likely that many of the NTG ratios will be near or greater than 1.0. Over two-thirds of all evaluation studies reviewed in a recent best-practice study had a net-to-gross value of approximately 1.0.[29]

Finally, there are cases where NTG—or its components—don't require measuring. Gross savings, adjusted for actual installation rates, are employed instead as the measure of program performance. That's also the case with regional transmission organizations (RTO) such as the New England independent system operator (ISO-NE), where verified gross savings are used as the basis for verification of energy-efficiency bids into the forward energy market.

There's also the question of what to do with the NTG ratio once it's measured, and how to factor it into performance metrics, such as cost-effectiveness tests. Although the total resource cost test (TRC)—as formulated in the *California Standard Practice for Cost-Benefit Analysis*

of Conservation and Load Management Programs (SPM)—has been almost universally adopted as the principal criterion for economic assessment of conservation programs, there was no clear or uniform method to how the NTG should be applied to the cost side of the TRC equation. Indeed it wasn't until 2007, almost 25 years after the SPM's initial publication in 1983, that the CPUC issued a memorandum to clarify the matter.[30] Even today there's little consensus on how to account for NTG in the calculation of TRC.

Assessing Blame

It's tempting to blame the critics of energy efficiency for the prolonged confusion over what to make of freeridership; and that wouldn't be entirely wrong. But skepticism about ratepayer-funded conservation isn't the full story. The fact is that the proponents of energy efficiency have failed to devise and make a convincing case for workable solutions to the problem.

In truth, the energy efficiency community holds no common view about a precise definition of what constitutes net savings or how to quantify it. Even the relevance of freeridership lacks consensus. Advocates of ratepayer-funded conservation have regarded freeridership as irrelevant and have dismissed it as a mere distraction.[31] Some skeptics, on the other hand, have singled out freeridership as a fundamental flaw in energy-efficiency policy; a byword for everything that's wrong with ratepayer-subsidized conservation.

Freeridership and the broader question of attribution are legitimate concerns when ratepayer funds are used for what's presumed to be a socially optimal outcome. Efficient allocation of resources must be a part of the process of making policy decisions and designing programs to implement them.[32]

But the lack of progress and the resulting uncertainty have surely inhibited creativity and innovation in program design and delivery. Program administrators have tended toward risk aversion, encouraged to focus on performance targets and to avoid regulatory penalties, instead of experimenting with potentially better programs.

An even more important reason for taking these seemingly conceptual and methodological disagreements seriously is this: If the concept of NTG and its measurement are perceived by policymakers and much of the public as dubious and inherently problematic, then political support for energy efficiency and, critically, its role in addressing larger global environmental issues, could dissipate.

Of course, measuring program performance remains a challenge. The measurement of NTG remains, as some experts have noted, an art rather than a science. [33]

But what if the measurement itself turns out to be the problem? Certainly, program administrators should avoid programs where freeridership is known to be high and discontinue offering the programs when high freeridership is suspected. But insisting on measuring freeridership with tools of questionable reliability isn't the answer.

A Modest Proposal

Knowing whether a program is likely to attract freeriders may be easier than it's made to appear. Simple rules might well do.

First, regulators could establish a series of hurdles, or tests, that a program has to pass to avoid high freeridership. The exact nature of the tests would vary depending on the program, but the amount of the incentive relative to the cost of the measure is a good general gauge. When very low incentives appear to attract a large number of participants, or net benefits to participants are very high, chances are the majority of participants will be freeriders.

Second, program administrators should monitor product markets closely to see if a transformation has occurred and exit the market when it has. Expected savings and costs of conservation measures should be revised periodically based on actual saturation of energy-efficient products. In this way, research and evaluation resources are invested in improving programs, rather than merely proving compliance.

Freeriders are, in fact, exactly the type of participants that administrators would want for a program.

For this approach to work, regulators would have to recognize such obvious, albeit hard-to-quantify, benefits, and be willing to credit program administrators with the results by lowering their saving targets accordingly, or even reward them. These ideas already seem to be taking hold in several states, where gross savings, adjusted for a deemed level of freeridership, are the basis for determining compliance and program performance. This sensible approach ought to address most of the concerns about freeriders. More importantly, it will encourage program administrators to undertake more optimal levels of energy efficiency and focus more on programs such as market transformation that might produce longer-lasting effects at potentially lower costs.

Well-conceived and effectively executed programs will likely generate enough spillover savings to offset freeridership. What few freeriders remain can be regarded, as one evaluation expert puts it, simply "a cost of doing business."[34]

Endnotes:

1. *Decision Approving 2010 to 2012 Energy Efficiency Portfolios and Budgets*, CPUC 09-09-047, California Public Utilities Commission, September 2009.
2. *State of the Efficiency Program Industry - 2009 Expenditures, Impacts & 2010 Budgets*, Consortium for Energy Efficiency (CEE), Boston, December 2010.
3. For a discussion of risk-reward mechanism in California see Rufo, Michael, *Evaluation and Performance Incentives: Seeking Paths to (Relatively) Peaceful*

Coexistence, Proceedings, the International Energy Program Evaluation Conference, Portland, Oregon, August 2009.

4. Hardin, Russell, "The Freerider Problem," *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), Edward N. Zalta (ed.).
5. Samuelson, P. A., "The Pure Theory of Public Expenditure," *Review of Economics and Statistics*, 36, 387-389, 1954.
6. Hardin, Russell, Op. cit.
7. It's been argued that exclusion is, more often than not, merely a problem of technology, not of logic. People are often easily excluded from enjoying public goods such as television broadcasting through the use of various devices that enable providers to charge the beneficiaries and to exclude those who don't pay, as for example, service providers that use cable rather than broadcasting over the air to provide television programming at a substantial price.
8. In some jurisdictions NTG is defined more broadly and the difference between gross and net savings includes other factors such as spillover, price-induced, or naturally occurring conservation and, in the case of certain upstream programs, leakage: purchase of energy-efficiency products by consumers outside a program administrator's service area.
9. Saxonis, William P., "Freeridership and Spillover: A Regulatory Dilemma," Proceedings, *Energy Program Evaluation Conference*, Chicago, August 2007.
10. For a discussion of general criticism of energy efficiency see Geller, Howard, et. al., "The experience with Energy Efficiency Policies and Programs in IEA Countries, Learning from the Critics," International Energy Agency Information, August 2005.
11. "Utility Energy Efficiency Programs: Too Cheap to Meter?" ELCON Policy Brief, Electricity Consumers Resource Council, December 2008.
12. It's paradoxical that these concerns are often raised by industrial consumers, who have historically received at least a proportionate share of the conservation subsidies provided by utilities.
13. The Cadmus Group, *Net-to-Gross Evaluation of Avista's DSM Programs*, Prepared for Avista Utilities, Spokane, Wash., April 2011.
14. Joskow, P.L. and D.B. Marron, "What Does a Negawatt Really Cost? Evidence from Utility Conservation Programs" *The Energy Journal*, 13(4): 41-74. See also Paul Joskow and Donald Marron, *What Does a Negawatt Really Cost? Further Thoughts and Evidence*, MIT-CEEPR 93-007WP, May 1993.
15. Ibid, p.47.
16. See, for example, "Guidelines for Estimating Net-To-Gross Ratios Using the Self-Report Approaches," the Energy Division, California Public Utilities Commission, 2007.
17. For an ample discussion of this topic, see Peters, Jane S. and Marjorie McRae, "Freeridership Measurement Is Out of Sync with Program Logic … or, We've Got the Structure Built, but What's Its Foundation?" *Proceedings, ACEEE Summer Study*, Monterey, Calif., August 2008.
18. For a discussion of how alternative scoring methods might alter the results, see Kenneth M. Keating, "Freeridership Borscht: Don't Salt the Soup," *Proceedings, International Energy Program Evaluation Conference*, Portland, OR, August 2009.
19. Peters, Jane S. and Marjorie McRae, op.cit.
20. Stern, Paul C., T. Dietz, T. Abel, G.A. Guagnano, L. Kalof, "A value-belief-norm theory of support for social movements: The case of environmentalism," *Human Ecology Review* 6 (2).
21. Chappell, Catherin, et al., "Net Savings in Nonresidential New Construction: Is a Market Based Approach the Answer?" *Proceedings, International Energy Program Evaluation Conference*, New York, 2005.
22. Ridge, Richard, "The Origins of the Misunderstood and Occasionally Maligned Self-Report Approach to Estimating the Net-To-Gross Ratio," *International Energy Program Evaluation Conference*, Portland, Ore., August 2009.
23. Erickson, Jeff and Mary Klos, "Freeridership: Arbitrary Algorithms vs. Consistent Calculations," Proceedings, *International Energy Program Evaluation Conference*, Portland, Ore., August 2009.
24. TecMarket Works, California *2002-2003 Portfolio Energy Efficiency Program Effects and Evaluation Summary Report*, prepared for Southern California Edison Co., January 2006, p. 41, 68-69.
25. California Public Utilities Commission, *Guidelines for Estimating Net to Gross Ratios Using Self Report Approach*, CPUC Energy Division, October 2007.
26. Tetra Tech, *Massachusetts Program Administrators Cross-Cutting C&I Freeridership and Spillover Methodology Study Final Report*, Prepared for Massachusetts Program Administrators, April 18, 2011, Revised May 20, 2011.
27. Friedman, Rafael, "Maximizing Societal Uptake of Energy Efficiency in the New Millennium: Time for Net-to-Gross to Get Out of the Way?" Proceedings, *International Energy Program Evaluation Conference*, Chicago, August 2007.
28. The surveyed jurisdictions were Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Hawaii, Idaho, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Texas, Utah, Vermont, Washington, and Wisconsin.
29. Quantum Consulting (now part of Itron). This study was managed by Pacific Gas & Electric under the auspices of the California Public Utility Commission in association with the California Energy Commission. The information from the study is available at: http://www.eebestpractices.com/index.asp
30. California Public Utilities Commission, *Standard Practice for Cost-Benefit Analysis of Conservation and Load Management Programs*, 1983, revised in 1988, 1992 and 2001. The Clarification Memorandum was issued by CPUC in 2007.
31. Heins, Stephen, "Energy Efficiency and the Spectre of Freeridership, Is a Kilowatt Saved Really a Kilowatt Saved?" Proceedings, *ACEEE Summer Study on Energy Efficiency in Buildings*, Monterey, Calif., August 2006.
32. Fagan, Jennifer, et.al, *A Meta-Analysis of Net to Gross Estimates in California*, Proceedings, Association of Energy Services Professionals Conference, 2009.
33. *Model Energy Efficiency Program Impact Evaluation Guide*, National Action Plan for Energy efficiency, November 2007, prepared by Schiller Associates, November 2007.
34. Personal conversation with Dr. Ben Bronfman, a member of the planning committee, the International Energy Program Evaluation Conference, and an Executive Director at The Cadmus Group.

Appendix E:

SURVEYS

- Appliance Rebate Program Area
    - NYSERDA New York's Great Appliance Swap Out Rebate Program Participate Phone Survey
- Energy Code Program Area
    - Wave 1 - Pre Support Service Survey
    - Wave 2- Post Training and Support Service Survey
    - Wave 3 – Pre Surveys and Post Surveys
- Energy Efficiency Program Area
    - NYSERDA Energy Efficiency Program Survey
    - NYSERDA ARRA Energy Efficiency Programs, Onsite/Telephone Participant Survey
- Renewable Energy Program Area
    - Online Participant Survey RFP 10 and RFP 1613
    - Telephone Survey, PON 1686 End Users (Business)
    - Telephone Survey, PON 1686 End Users (Residential)
    - Interview, PON 1686 Installers
- Transportation Program Area
    - Transportation Program Area Telephone Survey
- Energy Conservation Studies Program Area
    - Measure Adoption Rate (MAR), Program Overlap and Attribution Telephone Survey

NYSERDA New York's Great Appliance Swap Out Rebate Program
Participant Phone Survey

June 22, 2011

Hello, my name is _____, and I'm calling on behalf of the New York State Energy Research and Development Authority (NYSERDA). NYSERDA is conducting a study about New York's Great Appliance Swap Out Program that you participated in during 2010. The rebates were funded through the federal American Recovery and Reinvestment Act, also known as "ARRA" (SAY 'air-ah'), or the "Recovery Act" or "Stimulus" Funding, and administered through NYSERDA for people in New York. I'd like to ask you a few questions about your new appliance purchase.

Notes for interviewer
[**Timing.** For most people it takes only about xx10 minutes, but it may take as long as xx15 to xx20 minutes.. If now is not a good time, we can set up a more convenient call back time]
[**Who are you?** I am from xxinsert name, a survey data collection firm, calling on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA]
[**Why are you doing this study?** We are calling customers who recently purchased new appliances and received rebates from New York's Great Appliance Swap Out through the federal American Recovery and Reinvestment Act, also known as ARRA (SAY 'air-ah') which was administered through NYSERDA to better understand the impacts of how those rebates were used by people in New York to improve energy efficiency.]
[**Sales concern.** I am not selling anything. We are just asking for feedback about your experience with the program.]
[**Questions about validity.** If you have more questions about this study, you can contact Michael Bello at 866-697-3732 ext. 3495.

Screener [S Series]

Table 1: New York's Great Appliance Swap Out Rebate Options

	Appliance	Rebate without Recycling	Total Rebate with Recycling
Option 1 Single Appliances			
	Refrigerator	$75	$105
	Freezer	$50	$75
	Clothes Washer	$75	$100
Option 2 Bundle of 3 Appliances at Super Efficiency			
	Refrigerator (CEE Tier 2 or 3)	$200	$225
	Clothes Washer (CEE Tier 2 or 3)	$200	$215
	Dishwasher (CEE Tier 1 or2)	$100	$115
	Total for Bundle	$500	$555

[IF DATABASE RECORDS INDICATE OPTION 1, OTHERWISE SKIP TO S3]

S1. Our records indicate that your household received a rebate from New York's Great Appliance Swap Out Program for the purchase of a [INSERT appliance type(s) from database (refrigerator, freezer and/or clothes washer)]. Are you the person most knowledgeable about this purchase?

01 Yes [CONFIRM 'Do you recall purchasing the [insert appliance type(s)]

02 No, another person is [ASK TO SPEAK TO THE MOST APPROPRIATE PERSON AND START OVER]

03 No, does not recall receiving rebate [PROBE: 'Are you certain? Program records indicate that you received a rebate of [INSERT amount by appliance type: $50 for a freezer, $75 for a refrigerator or clothes washer.]. You may have also received an additional rebate amount if you recycled an old appliance at the same time.]

04 No, different appliances [RECORD appliance type_____] [Continue if appliance type is refrigerator, freezer, clothes washer or bundle of three appliances that consist of a refrigerator, clothes washer, and dishwasher; Otherwise THANK AND TERMINATE]

98.(Don't know) [PROBE: 'Our program records indicate that you received a rebate of INSERT amount by appliance type: $50 for a freezer, $75 for a refrigerator or clothes washer.]. You may have also received an additional rebate amount if you recycled an old appliance at the same time.]

99.REFUSED [THANK AND TERMINATE]

S2. [IF DATABASE INDICATES RECYCLING UNDER OPTION 1] Our records also indicate that you recycled your old [INSERT appliance type(s) from database (refrigerator, freezer, clothes washer)]. Is that correct?

01 Yes

02 No, does not recall recycling old appliance [PROBE: 'Are you certain? Program records indicate that you received an additional rebate of [INSERT amount by appliance type: $30 for a refrigerator and $25 for a freezer or clothes washer.]

03 No, recycled different appliances [RECORD appliance type_____] [Continue if appliance type is refrigerator, freezer, clothes washer; Otherwise THANK AND TERMINATE]

98.(Don't know) [PROBE: ' Our program records indicate that you recycled your appliance and received a rebate of INSERT amount by appliance type: $30 for a refrigerator and $25 for a freezer or clothes washer. Does that sound familiar?]

99.REFUSED [THANK AND TERMINATE]

S3. [IF DATABASE INDICATES OPTION 2; OTHERWISE SKIP TO P1]Our records indicate that your household received a rebate from New York's Great Appliance Swap Out Program for the purchase of a bundle of three high efficiency appliances that consisted of a refrigerator, clothes washer, and dishwasher. Are you the person most knowledgeable about this purchase?

01 Yes [CONFIRM 'Do you recall purchasing a refrigerator, clothes washer, and dishwasher']

02 No, another person is [ASK TO SPEAK TO THE MOST APPROPRIATE PERSON AND START OVER]

03 No, does not recall receiving rebate [PROBE: 'Are you certain? Program records indicate that you received a rebate of $500 for a package of three appliances that consisted of a refrigerator, clothes washer, and dishwasher. You may have also received an additional rebate amount if you recycled (one or more of) your old appliances at the same time.' OTHERWISE THANK AND TERMINATE]

98.(Don't know) [PROBE: 'Our program records indicate that you received a rebate of $500 for a package of three appliances that consisted of a refrigerator, clothes washer, and dishwasher. You may have also received an additional rebate amount if you recycled (one or more of) your old appliances at the same time. Does that sound familiar?' OTHERWISE THANK AND TERMINATE]

99.REFUSED [THANK AND TERMINATE]

S4. [IF RECORDS INDICATE RECYCLING UNDER OPTION 2, OTHERWISE SKIP TO P1] Our records also indicate that your household received an additional rebate for recycling your old [INSERT refrigerator, clothes washer, and/or dishwasher]. Is that correct?

01 Yes

02 No, does not recall receiving recycling rebate [PROBE: 'Are you certain? Program records indicate that you recycled your old appliances and received a rebate of [INSERT amount by appliance type: $25 for a refrigerator, $15 for a freezer or clothes washer, up to $55 for recycling all three].

03 No, recycled different appliances [RECORD appliance type_____] [Continue if appliance type is refrigerator, clothes washer, dishwasher or bundle of three appliances that consist of a refrigerator, clothes washer, and dishwasher; OTHERWISE THANK AND TERMINATE]

98.(Don't know) [PROBE: 'Our program records indicate that you recycled your old appliances and received a rebate of [INSERT amount by appliance type: $25 for a refrigerator, $15 for a freezer or clothes washer, up to $55 for recycling all three. Does that sound familiar?' OTHERWISE THANK AND TERMINATE]

99.REFUSED [THANK AND TERMINATE]

Program Information and Satisfaction [P Series]

Now I would like to ask you some general questions about New York's Great Appliance Swap Out Rebate program.

P1. How did you find out about New York's Great Appliance Swap Out Rebate program? (DO NOT READ; ALLOW MULTIPLE RESPONSE)

Media

01 (TV ad)
02 (TV news feature story)
03 (Radio ad)
04 (Radio public service announcement)
05 (Radio news feature story)
06 (Newspaper article)
07 (Newspaper ad)

Utility/NYSERDA Sources

08 (NYSERDA website)
09 (Bill insert/mailing from utility)
10 (Utility website)

Retailer Sources

11 (Salesperson)
12 (Store circular/flyer)
13 (Signs in store)

Other Sources

14 (Co-worker, family, or friend)
15 (Internet [SPECIFY SITE_____])
97. (Other [SPECIFY_____])
98 (Don't know)
99 (Refused)

P2. At what point did you ***first*** learn about the rebate? Was it ***before*** you went to the store to make the purchase, ***at*** the store while you were making the purchase, or ***after*** you had already made the purchase?

01 Before going to store
02 At the store
03 After had made the purchase [SKIP TO P4]
04 (Other) [SPECIFY}_____
98 (Don't know)
99 (Refused)

P3. [IF P2=03 (learned about rebate after purchase) SKIP TO P4] Did the salesperson at the retailer influence your decision to apply for the rebate through New York's Great Appliance Swap Out program? Would you say the salesperson was not influential at all, slightly influential, somewhat influential, very influential, or extremely influential in your decision to apply for the rebate. [READ; RECORD NUMBER, 98 don't know, 99 Refused]

1. Not Influential at all
2. Slightly Influential
3. Somewhat Influential
4. Very Influential
5. Extremely Influential

P4. Let's walk through the application process step-by-step. The application process consisted of filling out an initial rebate application, followed by mailing in the proof of purchase. Did you fill out the initial rebate application over the phone, on-line, or did you print it from the website and send it in? [READ, IF NECESSARY]

01 Over the phone
02 Signed up online
03 Printed from the website and sent it in
04 (Used more than one method)
98 (Don't know)
99 (Refused)

P5. After submitting your initial application, were you put on a waiting-list by the program because funding was limited?

01 Yes
02 No [SKIP TO P7]
98 (Don't know)
99 (Refused)

P6. [IF P2=03 (Learned about rebate after purchase, SKIP to P7] Did you know that you would be put on the waiting list ***before*** you purchased the appliance, and that the rebate money might not be available?

01 Yes
02 No
98 (Don't know)
99 (Refused)

P7. I am going to ask you to rate how difficult or easy it was for you to complete various steps of the application process. Please tell me if it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to…? [ASK A-E BASED ON SKIP PATTERNS; ASK F LAST. RECORD NUMBER (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

A. [IF P4=1] Complete the initial application over the phone
B. [IF P4=2] Complete the initial application online
C. [If P4=3] Complete the initial application in writing

D. [IF P4=4] Complete your initial application
E. [IF P5=1] Continue the application process after being wait-listed
F. [DATABASE RECORDS INDICATE A REBATE FOR RECYCLING] Provide the receipts for proof that old appliance(s) was/were recycled
G. Provide the final proof-of-purchase information

P8. [P7A< 3] Please describe any difficulties you had in filling out the initial application over the phone. [DO NOT READ, MULTIPLE RESPONSE]
01 (Did not know details about appliance description)
02 (Had not actually purchased the appliance yet)
03 (Did not have proof of purchase/receipt number for appliance to verify purchase)
04 (Put on hold/long wait on phone)
05 (Technical difficulties with automated phone system)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P9. [P7B< 3] Please describe any difficulties you had in filling out the initial application online. [DO NOT READ, MULTIPLE RESPONSE]
01 (Did not know details about appliance description)
02 (Had not actually purchased the appliance yet)
03 (Did not have proof of purchase/receipt number for appliance to verify purchase)
04 (Website was confusing)
05 (Website would not allow me make changes/website blocked my application)
06 (Technical difficulties with my computer/Internet service—Not related to website)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P10. [P7B<3] Please describe any difficulties you had in filling out the initial application on paper. [DO NOT READ, MULTIPLE RESPONSE]
07 (Did not know details about appliance description)
08 (Had not actually purchased the appliance yet)
09 (Did not have proof of purchase/receipt number for appliance to verify purchase)
10 (Website was confusing)
11 (Website would not allow me make changes/website blocked my application)
12 (Technical difficulties with my computer/Internet service—Not related to website)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P11. [IF P7C < 3] Please describe any difficulties you had in completing the initial application. [DO NOT READ, MULTIPLE RESPONSE]

01 (Did not know details about appliance description)
02 (Had not actually purchased the appliance yet)
03 (Did not have proof of purchase/receipt number for appliance to verify purchase)
04 (Put on hold/long wait on phone)
05 (Technical difficulties with automated phone system)
06 (Website was confusing)
07 (Technical difficulties with computer/Internet service)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P12. [IF P7D <3] Please describe any difficulties you had in continuing with the application after being waitlisted. [DO NOT READ, MULTIPLE RESPONSE]

01 (Did not know details about appliance description)
02 (Had not actually purchased the appliance yet)
03 (Did not have proof of purchase/receipt number for appliance to verify purchase)
04 (Put on hold/long wait on phone)
05 (Technical difficulties with automated phone system)
06 (Website was confusing)
07 (Technical difficulties with computer/Internet service)
08 (Wait was too long)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P13. [P7E< 3] Please describe any difficulties you had in submitting the receipts to prove the old appliance(s) was/were properly recycled [DO NOT READ, MULTIPLE RESPONSE]

01 (Sent in wrong receipt)
02 (Did not want to send in original receipt/Program would not accept photocopy of receipt)
03 (Lost receipt)
04 (Confusion over efficiency levels and rebate amounts)
05 (Could not verify recycling)
06 (Could not find form to send in)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P14. [P7F< 3] Please describe any difficulties you had in submitting the final proof of purchase receipts for the program through the mail. [DO NOT READ, MULTIPLE RESPONSE]

01 (Sent in wrong sales receipt)
02 (Did not want to send in original sales receipt/Program would not accept photocopy of sales receipt)
03 (Lost sales receipt)
04 (Confusion over efficiency levels and rebate amounts)
05 (Could not verify recycling)
06 (Could not find form to send in)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

P15. After you had completed the entire application process (including mailing in the receipt), how long did it take to receive the rebate check from the program? Was it [READ]:

01 Less than 4 weeks
02 Between 4 to 6 weeks
03 Between 7 to 8 weeks
04 More than 8 weeks
05 Have not received the rebate check yet
98 (Don't know)
99 (Refused)

P16. Now I'm going to ask you to rate how difficult or easy it was to participate in the program overall. Please tell me if it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to participate in the program.

P17. [If P16<3] Please describe what was difficult about participating.

01 (Information required was overly burdensome)
02 (Confusion about what appliances qualified)
03 (Receipt requirements were too strict)
04 (Process took too long)
05 (Being wait listed was frustrating)
06 (Wait times on the phone)
07 (Finding out about the program requirements was difficult)
08 (Technical problems on-line)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Bundled Purchases [B Series]

[IF PURCHASED UNDER OPTION 2: BUNDLE OF 3 APPLIANCES (REFRIGERATOR, CLOTHES WASHER, DISHWASHER) OTHERWISE SKIP TO REFRIGERATOR SECTION]

Now I would like to ask you a few questions about buying the group of three appliances.

B1. [IF P2=03 (Learned about rebate after purchase), GOTOB2] Had you planned to purchase any of the appliances ***before*** learning about the rebate? [IF YES] Which ones?

- 01 Planned to purchase all 3
- 02 Refrigerator and clothes washer only
- 03 Refrigerator and dishwasher only
- 04 Clothes washer and dishwasher only
- 05 Refrigerator only
- 06 Clothes washer only
- 07 Dishwasher only
- 08 Did not plan to purchase any of the appliances before learning about rebate
- 98 (Don't know)
- 99 (Refused)

B2. If New York's Great Appliance Rebate had not been available, would you have purchased the group of all three appliances together anyway, would you have purchased just one or two of the appliances, or would you have not purchased any of the appliances?

- 01 Would have purchased all 3 appliances anyway
- 02 Would have purchased just two of the appliances
- 03 Would have purchased just one of the appliances
- 04 Would not have purchased any of the appliances
- 98 (Don't know)
- 99 (Refused)

B3. [IF B2=01,02, or 03 (Would have purchased 1, 2, or all 3), OTHERWISE SKIP TO B4] If New York's Great Appliance Swap Out rebate had not been available when you made your purchase, would you have purchased the appliance(s) sooner, at the same time, within a year, or more than a year later?

- 01 Sooner
- 02 At the same time
- 03 Within a year
- 04 More than a year later
- 05 Would not have made purchase at all
- 98 (Don't know)
- 99 (Refused)

B4. If New York's Great Appliance Swap Out Rebate had not been available, would you have purchased the same models for all three appliances or different models for at least one appliance?

01 Same for ALL 3 [SKIP TO B6]
02 Different model for two appliances
03 Different model for one appliance
98 (Don't know)
99 (Refused)

B5. [IF B4=02 or 03 (Would have purchased different models), OTHERWISE SKIP TO B6] How would the models be different? [ALLOW MULTIPLE RESPONSES]

01 Would have purchased less expensive models
02 Would have purchased models with features that were not available on ENERGY STAR models
03 Would have purchased models with lower efficiency
04 Other [SPECIFY]
98 (Don't know)
99 (Refused)

B6. The appliances that you purchased under the Bundled Option 2 of New York's Great Appliance Swap Out program all exceed the ENERGY STAR standards for energy efficiency. Why did you choose to purchase the higher efficiency models? [MULTIPLE RESPONSE, DO NOT READ]

01 (To get rebate)
02 (To save energy)
03 (To save money on electric/gas/utility bills)
04 (To help environment)
05 (They had features I wanted)
06 (Better quality)
07 (Cheaper/less expensive than others)
08 (Other) [SPECIFY]
98 (Don't know)
99 (Refused)

B7. Did you purchase all three appliances from the same retail store or different retailers?

01 Same
02 Different
98 (Don't know)
99 (Refused)

B8. How easy was it for you to find three appliance models that met the higher energy efficiency criteria for you to qualify for New York's Great Appliance Swap Out Rebate under the bundled Option 2? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to find the three appliances that met the efficiency criteria for the rebate. [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

B9. [IF[B8< 3 (Not easy to find models)] Please describe any difficulties you had in finding appliance models that met the efficiency criteria for New York's Great Appliance Swap Out Rebate under the bundled Option 2. [DO NOT READ, MULTIPLE RESPONSE]

01 (Limited or no selection of higher-efficient/CEE Tier 2 or Tier 3 refrigerators at retailer)
02 (Limited or no selection of higher-efficient/CEE Tier 2 or Tier 3 clothes washers at retailer)
03 (Limited or no selection of higher-efficient/CEE Tier 1 or Tier 2 dishwashers at retailer)
04 (Salespeople at retailers did not know about energy efficiency)
05 (Energy efficient refrigerators did not have features I wanted)
06 (Energy efficient clothes washers did not have features I wanted)
07 (Energy efficient dishwashers did not have features I wanted)
08 (Cost/price of qualifying refrigerators too high)
09 Cost/price of qualifying clothes washers too high)
10 Cost/price of qualifying dishwashers too high)
11 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Refrigerator Purchases [R Series]

[IF PURCHASED A REFRIGERATOR, OTHERWISE SKIP TO FREEZER SECTION]

Now I would like to ask you a few questions about buying your new refrigerator.

R1. [IF P2=03 (Learned about rebate after purchase), GOTO R3] Had you planned to purchase a new refrigerator ***before*** learning about the rebate?
- 01 Yes
- 02 No
- 98 (Don't know)
- 99 (Refused)

R2. If New York's Great Appliance Swap Out rebate had not been available when you made your purchase, most likely would you have purchased the refrigerator sooner, at the same time, within a year, more than a year later, or would you not have made the purchase at all?
- 01 Sooner
- 02 At the same time
- 03 Within a year
- 04 More than a year later
- 05 Would not have made purchase at all
- 98 (Don't know)
- 99 (Refused)

R3. Did the salesperson talk about specific refrigerator models that qualified for the rebate?
- 01 Yes
- 02 No
- 98 (Don't know)
- 99 (Refused)

R4. Did the salesperson talk about specific refrigerator models being ENERGY STAR qualified?
- 01 Yes
- 02 No
- 98 (Don't know)
- 99 (Refused)

R5. Did the salesperson talk about specific refrigerator models meeting higher-efficient standards? These refrigerators have the ENERGY STAR label, but also have higher efficiency levels according to an efficiency group called the Consortium for Energy Efficiency (CEE). They might have been called CEE Tier 2 or Tier 3 high-efficient refrigerators.
- 01 Yes
- 02 No
- 98 (Don't know)
- 99 (Refused)

R6. The New York's Great Appliance Swap Out program required that appliances be ENERGY STAR qualified. However, even higher efficient units are available. In addition to being ENERGY STAR qualified, was the refrigerator that you purchased a high-efficient model that met the CEE Tier 2 or Tier 3 standards?

01 Yes, model was higher-efficient to CEE Tier 2 or Tier 3 standards
02 No model was efficient to ENERGY STAR standards only
98 (Don't know)
99 (Refused)

R7. [IF R2=5 (Would not have made purchase at all), SKIP to R9] If New York's Great Appliance Swap Out Rebate had not been available, would you have purchased the same refrigerator model or a different model?

01 Same [SKIP TO R9]
02 Different
98 (Don't know)
99 (Refused)

R8. [IF R7=02 (Would have purchased different model), OTHERWISE SKIP TO R9] How would it be different? [ALLOW MULTIPLE RESPONSES]

01 Would have purchased less expensive models
02 Would have purchased models with features that were not available on ENERGY STAR models
03 Would have purchased models with lower efficiency
04 Other [SPECIFY]
98 (Don't know)
99 (Refused)

R9. How easy was it for you to find a refrigerator model that met the energy efficiency criteria for you to qualify for New York's Great Appliance Swap Out Rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to find a refrigerator that met the efficiency criteria for the rebate. [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

R10. [IFR9< 3 (Not easy to find model)] Please describe any difficulties you had in finding a refrigerator that met the efficiency criteria for New York's Great Appliance Swap Out Rebate? [DO NOT READ, MULTIPLE RESPONSE]

01 (Limited or no selection of super-efficient/CEE Tier 2 or Tier 3 refrigerators at retailer)
02 (Limited or no selection of ENERGY STAR refrigerators at retailer)
03 (Salespeople at retailers did not know about energy efficiency)
04 (Limited selection of energy efficient refrigerators)
05 (Energy efficient refrigerators did not have features I wanted)
06 (Cost/price of qualifying refrigerators too high)
07 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Refrigerator Status in Home [RS Series]

RS1. ***Before*** buying the new refrigerator, how many refrigerators did you have in your home?

01 None
02 One unit
03 Two units
04 Three or more units
98 (Don't know)
99 (Refused)

RS2. Is the new refrigerator the main one used in your home, or did you buy it to be used as a second or spare unit? [IF CLARIFICATION NECESSARY: "A main or primary refrigerator would typically be located in the kitchen, plugged in or "on" all the time, and used for regular household purposes. A secondary or spare refrigerator is typically located somewhere other than in the kitchen and may be plugged in or "on" all or only part of the time."]

01 Main/Primary
02 Spare/Secondary
98 (Don't know)
99 (Refused)

RS3. ***Currently*** how many refrigerators do you have in your home?

01 One unit
02 Two units
03 Three or more units
98 (Don't know)
99 (Refused)

RS4. [IF RS3> 1 (Currently has more than one refrigerator)] How necessary is it to have a spare or second refrigerator for your household food and beverage storage needs? Would you say it is never, rarely, sometimes, very often, or always necessary to have a second refrigerator? [RECORD NUMBER, (1=never, 2=rarely, 3=sometimes, 4=very often, 5=always, 98 don't know, 99 Refused)]

RS5. [IF RS3> 1 (Currently has more than one refrigerator and RS2=01 (new refrigerator is primary)] Is your second refrigerator the former primary unit or had you been using the same refrigerator as your second unit all along?

01 Was the primary unit
02 Was the second/spare unit
03 (Other) [SPECIFY]
98 (Don't know)
99 (Refused)

RS6. [IF RS1=01 (None—no refrigerator prior to purchase), OTHERWISE SKIP TO RR1 (Refrigerator Recycling Section)]You said that before buying the new refrigerator, you did not have a refrigerator in this home. Is that because this is a new home for you?

01 Yes
02 No
98 (Don't know)
99 (Refused)

RS7. [IF RS1=01 (None—no refrigerator prior to purchase) AND RS6=01 (Yes, new home), OTHERWISE SKIP TORR1 (Refrigerator Recycling Section)] If the recycling rebate from New York's Great Appliance Swap Out program had not been available, would you have purchased a new or used refrigerator for your new home or would you have used a unit from your previous home?

01 Would have purchased NEW unit
02 Would have purchased USED unit
03 Would have used unit from previous home
98 (Don't know)
99 (Refused)

REFRIGERATOR RECYCLING SECTION [RR Series]

RR1. [IF DATABASE RECORDS INDICATE A REBATE FOR REFRIGERATOR RECYCLING, OTHERWISE SKIP TO RR13] Our records indicate that you recycled a refrigerator and received a rebate for recycling. In the year prior to the purchase of the new refrigerator, how often did you have the refrigerator that you recycled plugged in? Was it plugged in [READ, CHECK ONLY ONE]

01 All the time
02 Most of the time
03 Occasionally
04 Never
98 (Don't know)
99 (Refused)

RR2. Prior to the purchase of the new refrigerator, was the refrigerator that you recycled being used as your primary refrigerator, a spare unit, or was it not being used at all?

01 Primary unit
02 Secondary/spare unit
03 Not being used at all
98 (Don't know)
99 (Refused)

RR3. Approximately how old was the refrigerator that you recycled? Was it [READ, CHECK ONE]:

01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

RR4. Was the refrigerator in working condition when you decided to have it recycled?

01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

RR5. Had you ***already*** considered disposing of the refrigerator ***before*** you heard about the recycling rebate from New York's Great Appliance Swap Out program? By disposing of it, I mean had you already considered removing the appliance from your home by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center yourself before you heard about the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

RR6. If the recycling rebate from New York's Great Appliance Swap Out program had not been available to you, most likely what would you have done with your refrigerator? Would you have still gotten rid of it or would you have kept it? [READ]:

01 Still gotten rid of it [SKIP TO RR8]
02 Kept it [CONTINUE]
98 (Don't know) [SKIP TORR9]
99 (Refused) [SKIP TORR9]

RR7. [ASK IF RR6=02 or 98, 99 (Would have kept it, DK, Ref), OTHERWISE SKIP TO RR8] If you had kept it, most likely would you have it plugged in all of the time, plugged in just some of the time or would you have stored it unplugged and unused?

01 Plugged in all of the time [SKIP TO RR11]
02 Plugged in some of the time [SKIP TO RR11]
03 Unplugged and not in use [SKIP TO RR11]
98 (Don't know)
99 (Refused)

RR8. [ASK IF RR6=01 or 98, 99 (Would have gotten rid of it, DK, Ref), OTHERWISE SKIP TO RR9] If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, how soon do you think you would you have gotten rid of your refrigerator? Would you have gotten rid of it ***at the same time***, ***within a year*** of when the Program took it, ***or more than a year later***?

01 At same time
02 Within a year of when the program took it
03 More than a year later
98 (Don't know)
99 (Refused)

RR9. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, would the need to physically move the refrigerator out of your house and/or transport it have prevented you from getting rid of it?

01 Yes
02 No
03 Maybe
98 (Don't know)
99 (Refused)

RR10. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, how much, if anything, would you have been willing to pay your city, town, or someone else to remove or recycle your refrigerator for you?

01 $0—Would not pay any amount
02 [RECORD DOLLARS $1 to $999] $_____
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE ESTIMATE OF HOW MUCH YOU WOULD PAY?']
99 (Refused)

RR11. How difficult or easy was it for you to arrange for the appliance to be recycled so you could earn the additional rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to arrange for the appliance to be recycled? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

RR12. [RR11< 3] Please describe any difficulties you had in recycling your refrigerator. [DO NOT READ, MULTIPLE RESPONSE]

01 (Retailer did not offer recycling)
02 (Retailer charged extra for recycling)
03 (Difficult to find someone to take appliance)
04 (Difficult to schedule pickup time with recycler)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Did not recycle through program

RR13. [IF RS1='01-None'(Had no refrigerator prior to purchase) OR DATABASE INDICATED RECYCLING REBATE, SKIP TO 'Freezer Series.'
ASK ONLY IF DATABASE INDICATES NO REFRIGERATOR RECYCLNG REBATE] What did you do with the original refrigerator after you purchased the new one? Did you keep it or get rid of it?

01 Kept it
02 Got rid of it [SKIP TO RR15]
98 (Don't know)
99 (Refused)

RR14. [IF RR13=01 (Kept it), OTHERWISE SKIP TO RR15] Why did you decide to keep the original refrigerator in addition to your new one? [DO NOT READ]

01 (Want/need a second unit)
02 (Will give it away)
03 (Hassle to get rid of it)
04 (Other) [SPECIFY]
98 (Don't know)
99 (Refused)

RR15. [IF RR13=02 'Got rid of it' OTHERWISE SKIP TO RR16] As far as you know, was the refrigerator that you got rid of recycled, is it being reused, or was it sent to a garbage dump?

01 Recycled
02 Reused
03 Sent to garbage dump
04 (Other) [Specify]_____
98 (Don't know)
99 (Refused)

RR16. Approximately how old was the original refrigerator? Was it [READ, CHECK ONE]:
01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

RR17. Was the original refrigerator in working condition when you purchased the new one?
01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

Freezer Purchaser Module [F Series]

[IF PURCHASED A FREEZER, OTHERWISE SKIP TO CLOTHES WASHER SECTION]

F1. [IF P2=03 (Learned about rebate after purchase), GOTO F3]Now I would like to ask you a few questions about buying your new stand-alone freezer. Had you planned to purchase a new freezer ***before*** learning about the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

F2. If New York's Great Appliance Swap Out rebate had not been available when you made your purchase, most likely would you have purchased the freezer sooner, at the same time, within a year, more than a year later, or would you not have made the purchase at all?

01 Sooner
02 At the same time
03 Within a year
04 More than a year later
05 Would not have made purchase at all
98 (Don't know)
99 (Refused)

F3. Did the salesperson talk about specific freezer models that qualified for the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

F4. Did the salesperson talk about specific freezer models being ENERGY STAR qualified?

01 Yes
02 No
98 (Don't know)
99 (Refused)

F5. SKIP QUESTION FOR FREEZERS

F6. SKIP QUESTION FOR FREEZERS

F7. [IF F2R2=5 (Would not have made purchase at all), SKIP to F9R9]If New York's Great Appliance Swap Out Rebate had not been available, would you have purchased the same freezer model or a different model?

01 Same [SKIP TO F9]
02 Different
98 (Don't know)
99 (Refused)

F8. [IF R7=02 (Would have purchased different model), OTHERWISE SKIP TO F9] How would it be different? [ALLOW MULTIPLE RESPONSES]

01 Would have purchased less expensive models
02 Would have purchased models with features that were not available on ENERGY STAR models
03 Would have purchased models with lower efficiency
04 Other [SPECIFY]
98 (Don't know)
99 (Refused)

F9. How easy was it for you to find a freezer model that met the energy efficiency criteria for you to qualify for New York's Great Appliance Swap Out Rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to find a freezer that met the efficiency criteria for the rebate? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

F10. [IF F9< 3 (Not easy to find model)] Please describe any difficulties you had in finding a freezer that met the efficiency criteria for New York's Great Appliance Swap Out Rebate. [DO NOT READ, MULTIPLE RESPONSE]

01 (Limited or no selection of ENERGY STAR freezers at retailer)
02 (Salespeople at retailers did not know about energy efficiency)
03 (Limited selection of energy efficient freezers)
04 (Energy efficient freezers did not have features I wanted)
05 (Cost/price of qualifying freezers too high)
06 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Freezer Status in Home [FS Series]

FS1. ***Before*** buying the new freezer, how many freezers did you have in your home?
01 None
02 One unit
03 Two units
04 Three or more units
98 (Don't know)
99 (Refused)

FS2. SKIP QUESTION FOR FREEZERS

FS3. ***Currently*** how many stand alone freezers do you have in your home?
01 One unit
02 Two units
03 Three or more units
98 (Don't know)
99 (Refused)

FS4. How necessary for your household food storage needs is it to have a stand-alone freezer? Would you say it is never, rarely, sometimes, very often, or always necessary to have a stand-alone freezer? [RECORD NUMBER, (1=never, 2=rarely, 3=sometimes, 4=very often, 5=always, 98 don't know, 99 Refused]

FREEZER RECYCLING SECTION [FR Series]

FR1. [IF DATABASE RECORDS INDICATE A REBATE FOR FREEZER RECYCLING, OTHERWISE SKIP TOFR13] Our records indicate that you recycled a freezer and received a rebate for recycling. In the year prior to the purchase of the new freezer, how often did you have the freezer that you recycled plugged in? Was it plugged in [READ, CHECK ONLY ONE]

01 All the time
02 Most of the time
03 Occasionally
04 Never
98 (Don't know)
99 (Refused)

FR2. SKIP QUESTION FOR FREEZERS

FR3. Approximately how old was the freezer that you recycled? Was it [READ, CHECK ONE]:

01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

FR4. Was the freezer in working condition when you decided to have it recycled?

01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

FR5. Had you ***already*** considered disposing of the freezer ***before*** you heard about the recycling rebate from New York's Great Appliance Swap Out Rebate program? By disposing of it, I mean had you already considered removing the appliance from your home by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center yourself before you heard about the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

FR6. If the recycling rebate from New York's Great Appliance Swap Out program had not been available to you, what would you most likely have done with your freezer? Would you have still gotten rid of it or would you have kept it? [READ]:

01 Still gotten rid of it [SKIP TO FR8]
02 Kept it [CONTINUE]
98 (Don't know) [SKIP TO FR9]
99 (Refused) [SKIP TO FR9]

FR7. [ASK IF FR6=02 or 98, 99 (Would have kept it, DK, Ref), OTHERWISE SKIP TO FR8] If you had kept it, most likely would you have it plugged in all of the time, plugged in just some of the time or would you have stored it unplugged and unused?

01 Plugged in all of the time [SKIP TO **Error! Reference source not found.**]
02 Plugged in some of the time [SKIP TO **Error! Reference source not found.**]
03 Unplugged and not in use [SKIP TO **Error! Reference source not found.**]
98 (Don't know)
99 (Refused)

FR8. [ASK IF FR6=01 (Would have gotten rid of it), OTHERWISE SKIP TO FR9] If the recycling rebate from the ARRA Appliance Swap Out program had ***not*** been available, how soon do you think you would you have gotten rid of your freezer? Would you have gotten rid of it ***at the same time***, ***within a year*** , ***or more than a year later***?

01 At same time
02 Within a year
03 More than a year later
98 (Don't know)
99 (Refused)

FR9. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, would the need to physically move the freezer out of your house and/or transport it have prevented you from getting rid of it?

01 Yes
02 No
03 Maybe
98 (Don't know)
99 (Refused)

FR10. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, how much, if anything, would you have been willing to pay your city, town, or someone else to remove or recycle your freezer for you?

01 $0—Would not pay any amount
02 [RECORD DOLLARS $1 to $999] $_____
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE ESTIMATE OF HOW MUCH YOU WOULD PAY?']
99 (Refused)

FR11. How difficult or easy was it for you to arrange for the appliance to be recycled so you could earn the additional rebate? Would you say it was very difficult, somewhat difficult,

somewhat easy, very easy, or neither difficult nor easy to arrange for the appliance to be recycled? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

FR12. [RR11< 3] Please describe any difficulties you had in recycling your freezer.. [DO NOT READ, MULTIPLE RESPONSE]

01 (Retailer did not offer recycling)
02 (Retailer charged extra for recycling)
03 (Difficult to find someone to take appliance)
04 (Difficult to schedule pickup time with recycler)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Did not recycle through program

FR13. [IF FS1='01-None'(Had no freezer prior to purchase) OR DATABASE INDICATED RECYCLING REBATE, SKIP TO C1'Clothes Washer Series.'
ASK ONLY IF OR IF DATABASE INDICATES NO FREEZER RECYCLNG REBATE] What did you do with the original freezer after you purchased the new one? Did you keep it or get rid of it?

01 Kept it
02 Got rid of it [SKIP TOFR15]
98 (Don't know)
99 (Refused)

FR14. [IF FR13=01 (Kept it), OTHERWISE SKIP TO FR15] Why did you decide to keep the original freezer in addition to your new one? [DO NOT READ]

01 (Want/need a second unit)
02 (Will give it away)
03 (Hassle to get rid of it)
04 (Other) [SPECIFY]
98 (Don't know)
99 (Refused)

FR15. [IF RR13=02 'Got rid of it' OTHERWISE SKIP TO FR16] As far as you know, was the freezer that you got rid of recycled, is it being reused, or was it sent to a garbage dump?

01 Recycled
02 Reused
03 Sent to garbage dump
04 (Other) [Specify]_____
98 (Don't know)
99 (Refused)

FR16. Approximately how old was the original freezer? Was it [READ, CHECK ONE]:

01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

FR17. Was the original freezer in working condition when you purchased the new one?

01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

Clothes Washer Purchaser Module [C Series]

[IF PURCHASED A CLOTHES WASHER, OTHERWISE SKIP TO DISHWASHER SECTION]

C1. [IF P2=03 (Learned about rebate after purchase), GOTO C3]Now I would like to ask you a few questions about buying your new clothes washer. Had you planned to purchase a new clothes washer ***before*** learning about the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

C2. If New York's Great Appliance Swap Out rebate had not been available when you made your purchase, most likely would you have purchased the clothes washer sooner, at the same time, within a year, more than a year later, or would you not have made the purchase at all?

01 Sooner
02 At the same time
03 Within a year
04 More than a year later
05 Would not have made purchase at all
98 (Don't know)
99 (Refused)

C3. Did the salesperson talk about specific clothes washer models that qualified for the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

C4. Did the salesperson talk about specific clothes washer models being ENERGY STAR qualified?

01 Yes
02 No
98 (Don't know)
99 (Refused)

C5. Did the salesperson talk about specific clothes washer models meeting higher-efficient standards? These clothes washers have the ENERGY STAR label, but also have higher efficiency levels according to an efficiency group called the Consortium for Energy Efficiency (CEE). They might have been called CEE Tier 2 or Tier 3 high-efficient clothes washers.

01 Yes
02 No
98 (Don't know)
99 (Refused)

C6. The New York's Great Appliance Swap Out program required that appliances be ENERGY STAR qualified. However, even higher efficient units are available.. In addition to being ENERGY STAR qualified, was the clothes washer that you purchased a high-efficient model that met the CEE Tier 2 or Tier 3 standards?

01 Yes, model was higher-efficient to CEE Tier 2 or Tier 3 standards
02 No model was efficient to ENERGY STAR standards only
98 (Don't know)
99 (Refused)

C7. [IF C2=5 (Would not have made purchase at all), SKIP to C9]If New York's Great Appliance Swap Out Rebate had not been available, would you have purchased the same clothes washer model or a different model?

01 Same [SKIP TO C9]
02 Different
98 (Don't know)
99 (Refused)

C8. [IF C7=02 (Would have purchased different model), OTHERWISE SKIP TO C9] How would it be different? [ALLOW MULTIPLE RESPONSES]

01 Would have purchased less expensive models
02 Would have purchased models with features that were not available on ENERGY STAR models
03 Would have purchased models with lower efficiency
04 Other [SPECIFY]
98 (Don't know)
99 (Refused)

C9. How easy was it for you to find a clothes washer model that met the energy efficiency criteria for you to qualify for New York's Great Appliance Swap Out Rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to find a clothes washer that met the efficiency criteria for the rebate? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

C10. [IF[C9< 3 (Not easy to find model)] Please describe any difficulties you had in finding a clothes washer that met the efficiency criteria for New York's Great Appliance Swap Out Rebate. [DO NOT READ, MULTIPLE RESPONSE]

01 (Limited or no selection of ENERGY STAR clothes washer at retailer)
02 (Salespeople at retailers did not know about energy efficiency)
03 (Limited selection of energy efficient clothes washers)
04 (Energy efficient clothes washers did not have features I wanted)
05 (Cost/price of qualifying clothes washers too high)
06 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Clothes Washer Status in Home [CS Series]

CS1. ***Before*** buying the new clothes washer, how many clothes washers did you have in your home?

01 None
02 One unit
03 Two units
04 Three or more units
98 (Don't know)
99 (Refused)

CS2. SKIP QUESTION FOR CLOTHES WASHERS

CS3. SKIP QUESTION FOR CLOTHES WASHERS

CS4. SKIP QUESTION FOR CLOTHES WASHERS

CLOTHES WASHER RECYCLING SECTION [CR Series]

CR1. [IF DATABASE RECORDS INDICATE A REBATE FOR CLOTHES WASHER RECYCLING, OTHERWISE SKIP TO FR13] Our records indicate that you recycled a clothes washer and received a rebate for recycling. In the year prior to the purchase of the new clothes washer, how often did you have the clothes washer that you recycled plugged in? Was it plugged in [READ, CHECK ONLY ONE]

01 All the time
02 Most of the time
03 Occasionally
04 Never
98 (Don't know)
99 (Refused)

CR2. SKIP QUESTION FOR CLOTHES WASHERS

CR3. Approximately how old was the clothes washer that you recycled? Was it [READ, CHECK ONE]:

01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

CR4. Was the clothes washer in working condition when you decided to have it recycled?

01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

CR5. Had you ***already*** considered disposing of the clothes washer ***before*** you heard about the recycling rebate from New York's Great Appliance Swap Out Rebate program? By disposing of it, I mean had you already considered removing the appliance from your home by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center yourself before you heard about the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

CR6. If the recycling rebate from New York's Great Appliance Swap Out program had not been available to you, what would you most likely have done with your clothes washer? Would you have still gotten rid of it or would you have kept it? [READ]:

01 Still gotten rid of it [SKIP TO CR8]
02 Kept it [CONTINUE]
98 (Don't know) [SKIP TO CR9]
99 (Refused) [SKIP TO CR9]

CR7. [ASK IF CR6=02 or 98, 99 (Would have kept it, DK, Ref), OTHERWISE SKIP TO CR8] If you had kept it, most likely would you have it plugged in and used, plugged in and not used, or would you have stored it unplugged and unused?

01 Plugged in and used [SKIP TO CR11]
02 Plugged and not in use [SKIP TO CR11]
03 Unplugged and not in use [SKIP TO CR11]
98 (Don't know)
99 (Refused)

CR8. [ASK IF CR6=01 (Would have gotten rid of it), OTHERWISE SKIP TO CR9] If the recycling rebate from the ARRA Appliance Swap Out program had ***not*** been available, how soon do you think you would you have gotten rid of your clothes washer? Would you have gotten rid of it ***at the same time***, ***within a year***, ***or more than a year later***?

01 At same time
02 Within a year
03 More than a year later
98 (Don't know)
99 (Refused)

CR9. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, would the need to physically move the clothes washer out of your house and/or transport it have prevented you from getting rid of it?

01 Yes
02 No
03 Maybe
98 (Don't know)
99 (Refused)

CR10. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, how much, if anything, would you have been willing to pay your city, town, or someone else to remove or recycle your clothes washer for you?

01 $0—Would not pay any amount
02 [RECORD DOLLARS $1 to $999] $_____
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE ESTIMATE OF HOW MUCH YOU WOULD PAY?']
99 (Refused)

CR11. How difficult or easy was it for you to arrange for the appliance to be recycled so you could earn the additional rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to arrange for the appliance to be recycled? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

CR12. [CR11< 3] Please describe any difficulties you had in recycling your clothes washer. [DO NOT READ, MULTIPLE RESPONSE]

01 (Retailer did not offer recycling)
02 (Retailer charged extra for recycling)
03 (Difficult to find someone to take appliance)
04 (Difficult to schedule pickup time with recycler)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Did not recycle through program

CR13. [IF CS1='01-None'(Had no clothes washer prior to purchase) OR DATABASE INDICATED RECYCLING REBATE, SKIP TO D1'Demograhics.'
ASK ONLY IF OR IF DATABASE INDICATES NO CLOTHES WASHER RECYCLNG REBATE] What did you do with the original clothes washer after you purchased the new one? Did you keep it or get rid of it?

01 Kept it
02 Got rid of it [SKIP TO CR15]
98 (Don't know)
99 (Refused)

CR14. [IF CR13=01 (Kept it), OTHERWISE SKIP TO CR15] Why did you decide to keep the original clothes washer in addition to your new one? [DO NOT READ]

01 (Want/need a second unit)
02 (Will give it away)
03 (Hassle to get rid of it)
04 (Other) [SPECIFY]
98 (Don't know)
99 (Refused)

CR15. [IF CR13=02 'Got rid of it' OTHERWISE SKIP TO CR16] As far as you know, was the clothes washer that you got rid of recycled, is it being reused, or was it sent to a garbage dump?

01 Recycled
02 Reused
03 Sent to garbage dump
04 (Other) [Specify]_____
98 (Don't know)
99 (Refused)

CR16. Approximately how old was the original clothes washer? Was it [READ, CHECK ONE]:

01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

CR17. Was the original clothes washer in working condition when you purchased the new one?

01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

Dishwasher Purchaser Module [DW Series]

[IF PURCHASED A DISHWASHER, OTHERWISE SKIP TO DEMOGRAPHICS SECTION]

DW1. [IF P2=03 (Learned about rebate after purchase), GOTO DW3]Now I would like to ask you a few questions about buying your new dishwasher. Had you planned to purchase a new dishwasher ***before*** learning about the rebate?
01 Yes
02 No
98 (Don't know)
99 (Refused)

DW2. If New York's Great Appliance Swap Out rebate had not been available when you made your purchase, most likely would you have purchased the dishwasher sooner, at the same time, within a year, more than a year later, or would you not have made the purchase at all?
01 Sooner
02 At the same time
03 Within a year
04 More than a year later
05 Would not have made purchase at all
98 (Don't know)
99 (Refused)

DW3. Did the salesperson talk about specific dishwasher models that qualified for the rebate?
01 Yes
02 No
98 (Don't know)
99 (Refused)

DW4. Did the salesperson talk about specific dishwasher models being ENERGY STAR qualified?
01 Yes
02 No
98 (Don't know)
99 (Refused)

DW5. Did the salesperson talk about specific dishwasher models meeting higher-efficient standards? These dishwashers have the ENERGY STAR label, but also have higher efficiency levels according to an efficiency group called the Consortium for Energy Efficiency (CEE). They might have been called CEE Tier 1 or Tier 2 high-efficient dishwashers.
01 Yes
02 No
98 (Don't know)
99 (Refused)

DW6. SKIP QUESTION FOR DISHWASHERS

DW7. [IF DW2=5 (Would not have made purchase at all), SKIP to DW9]If New York's Great Appliance Swap Out Rebate had not been available, would you have purchased the same dishwasher model or a different model?

01 Same [SKIP TO DW9]
02 Different
98 (Don't know)
99 (Refused)

DW8. [IF DW7=02 (Would have purchased different model), OTHERWISE SKIP TO C9] How would it be different? [ALLOW MULTIPLE RESPONSES]

01 Would have purchased less expensive models
02 Would have purchased models with features that were not available on ENERGY STAR models
03 Would have purchased models with lower efficiency
04 Other [SPECIFY]
98 (Don't know)
99 (Refused)

DW9. How easy was it for you to find a dishwasher model that met the energy efficiency criteria for you to qualify for New York's Great Appliance Swap Out Rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to find a dishwasher that met the efficiency criteria for the rebate? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

DW10. [IF[DW9< 3 (Not easy to find model)] Please describe any difficulties you had in finding a dishwasher that met the efficiency criteria for New York's Great Appliance Swap Out Rebate. [DO NOT READ, MULTIPLE RESPONSE]

07 (Limited or no selection of ENERGY STAR dishwasher at retailer)
08 (Salespeople at retailers did not know about energy efficiency)
09 (Limited selection of energy efficient dishwasher)
10 (Energy efficient dishwashers did not have features I wanted)
11 (Cost/price of qualifying dishwashers too high)
12 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Dishwasher Status in Home [DS Series]

DS1. ***Before*** buying the new dishwasher, how many dishwashers did you have in your home?

05 None
06 One unit
07 Two units
08 Three or more units
98 (Don't know)
99 (Refused)

DS2. SKIP QUESTION FOR DISHWASHERS

DS3. SKIP QUESTION FOR DISHWASHERS

DS4. SKIP QUESTION FOR DISHWASHERS

DS5. SKIP QUESTION FOR DISHWASHERS

DS6. SKIP QUESTION FOR DISHWASHERS

DS7. SKIP QUESTION FOR DISHWASHERS

DISHWASHER RECYCLING SECTION [DR Series]

DR1. [IF DATABASE RECORDS INDICATE A REBATE FOR DISHWASHER RECYCLING, OTHERWISE SKIP TODR13] Our records indicate that you recycled a dishwasher and received a rebate for recycling. In the year prior to the purchase of the new dishwasher, how often did you have the dishwasher that you recycled plugged in? Was it plugged in [READ, CHECK ONLY ONE]

01 All the time
02 Most of the time
03 Occasionally
04 Never
98 (Don't know)
99 (Refused)

DR2. SKIP QUESTION FOR DISHWASHERS

DR3. Approximately how old was the dishwasher that you recycled? Was it [READ, CHECK ONE]:

01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

DR4. Was the dishwasher in working condition when you decided to have it recycled?

01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

DR5. Had you ***already*** considered disposing of the dishwasher ***before*** you heard about the recycling rebate from New York's Great Appliance Swap Out Rebate program? By disposing of it, I mean had you already considered removing the appliance from your home by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center yourself before you heard about the rebate?

01 Yes
02 No
98 (Don't know)
99 (Refused)

DR6. If the recycling rebate from New York's Great Appliance Swap Out program had not been available to you, what would you most likely have done with your dishwasher? Would you have still gotten rid of it or would you have kept it? [READ]:

01 Still gotten rid of it [SKIP TODR8]
02 Kept it [CONTINUE]
98 (Don't know) [SKIP TO DR9]
99 (Refused) [SKIP TO DR9]

DR7. [ASK IF DR6=02 or 98, 99 (Would have kept it, DK, Ref), OTHERWISE SKIP TO DR8] If you had kept it, most likely would you have it plugged in and used, plugged in and not used, or would you have stored it unplugged and unused?

04 Plugged in and used [SKIP TO DR11]
05 Plugged and not in use [SKIP TO DR11]
06 Unplugged and not in use [SKIP TO DR11]
98 (Don't know)
99 (Refused)

DR8. [ASK IF DR6=01 (Would have gotten rid of it), OTHERWISE SKIP TO DR9] If the recycling rebate from the ARRA Appliance Swap Out program had ***not*** been available, how soon do you think you would you have gotten rid of your dishwasher? Would you have gotten rid of it ***at the same time***, ***within a year***, ***or more than a year later***?

01 At same time
02 Within a year
03 More than a year later
98 (Don't know)
99 (Refused)

DR9. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, would the need to physically move the dishwasher out of your house and/or transport it have prevented you from getting rid of it?

01 Yes
02 No
03 Maybe
98 (Don't know)
99 (Refused)

DR10. If the recycling rebate from New York's Great Appliance Swap Out program had ***not*** been available, how much, if anything, would you have been willing to pay your city, town, or someone else to remove or recycle your dishwasher for you?

01 $0—Would not pay any amount
02 [RECORD DOLLARS $1 to $999] $_____
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE ESTIMATE OF HOW MUCH YOU WOULD PAY?']
99 (Refused)

DR11. How difficult or easy was it for you to arrange for the appliance to be recycled so you could earn the additional rebate? Would you say it was very difficult, somewhat difficult, somewhat easy, very easy, or neither difficult nor easy to arrange for the appliance to be recycled? [RECORD NUMBER, (1=very difficult, 2=somewhat difficult, 3=neither, 4=somewhat easy, 5=very easy, 98 don't know, 99 Refused)]

DR12. [DR11< 3] Please describe any difficulties you had in recycling your dishwasher. [DO NOT READ, MULTIPLE RESPONSE]

01 (Retailer did not offer recycling)
02 (Retailer charged extra for recycling)
03 (Difficult to find someone to take appliance)
04 (Difficult to schedule pickup time with recycler)
97 (Other)—[SPECIFY]
98 (Don't know)
99 (Refused)

Did not recycle through program

DR13. [IF DS1='01-None'(Had no dishwasher prior to purchase) OR DATABASE INDICATED RECYCLING REBATE, SKIP TO D1'Demograhics.'
ASK ONLY IF OR IF DATABASE INDICATES NO DISHWASHER RECYCLNG REBATE] What did you do with the original dishwasher after you purchased the new one? Did you keep it or get rid of it?

01 Kept it
02 Got rid of it [SKIP TO DR15]
98 (Don't know)
99 (Refused)

DR14. [IF DR13=01 (Kept it), OTHERWISE SKIP TO DR15] Why did you decide to keep the original dishwasher in addition to your new one? [DO NOT READ]

01 (Want/need a second unit)
02 (Will give it away)
03 (Hassle to get rid of it)
04 (Other) [SPECIFY]
98 (Don't know)
99 (Refused)

DR15. [IF DR13=02 'Got rid of it' OTHERWISE SKIP TO DR16] As far as you know, was the dishwasher that you got rid of recycled, is it being reused, or was it sent to a garbage dump?

01 Recycled
02 Reused
03 Sent to garbage dump
04 (Other) [Specify]_____
98 (Don't know)
99 (Refused)

DR16. Approximately how old was the original dishwasher? Was it [READ, CHECK ONE]:
01 5 years old or less
02 6 to 10 years old
03 11 to 15 years old
04 16 to 20 years old
05 More than 20 years old
98 (Don't know) [PROBE: 'CAN YOU GIVE AN APPROXIMATE AGE?']
99 (Refused)

DR17. Was the original dishwasher in working condition when you purchased the new one?
01 Yes
02 Yes, but not well
03 No
98 (Don't know)
99 (Refused)

Demographic Questions [D Series]

Now I have a few final questions for statistical purposes only.

D1. Is this home a permanent or seasonal residence?
01 PERMANENT RESIDENCE
02 SEASONAL RESIDENCE
98 (Don't know)
99 (Refused)

D2. Do you own or rent your home?
01 OWN
02 RENT
98 (Don't know)
99 (Refused)

D3. What type of residence do you live in? Would you say…? [READ RESPONSES]
01 Single family (house on a separate lot)
02 Two to four-family building
03 Apartment in a building with five or more units
04 Town or row house (adjacent walls to another house)
05 Mobile home, house trailer
06 Other [Specify]
98 (Don't know)
99 (Refused)

D4. Is the hot water in your home heated with gas, electricity, or something else?
01 Gas
02 Electricity

03 Indirect thru oil
04 Solar
05 Tankless/Instant
06 Heat pump
07 Other [SPECIFY]
98 (Don't know)
99 (Refused)

D5. What is the highest level of education you have completed? Would you say…? [READ CATEGORIES]
08 Less than high school
09 High school graduate
10 Technical or trade school graduate
11 Some college
12 Two-year college graduate
13 Four-year college graduate
14 Some graduate or professional school
15 Graduate or professional degree
98 (Don't know)
99 (Refused)

D6. Which of the following categories best describes your age? [READ CATEGORIES]

01 18 to 24
02 25 to 34
03 35 to 44
04 45 to 54
05 55 to 64
06 65 or over
98 (Don't know)
99 (Refused)

D7. What category best describes your total household income in 2009, before taxes? [READ CATEGORIES]

01 Less than $15,000
02 $15,000 - $24,999
03 $25,000 - $34,999
04 $35,000 - $49,999
05 $50,000 - $74,999
06 $75,000 - $99,999
07 $100,000 or more
98 (Don't know)
99 (Refused)

D8. **[DO NOT READ]** Gender

01 FEMALE
02 MALE
98 (Don't know)
99 (Refused)

CLOSING:
Those are all the questions I have. Thank you very much for your time and participation. Have a great day.

Plan Review Support Service

Pre Support Service Survey

Please answer each of the following questions so that we can better tailor training for you on the Energy Conservation Construction Code of New York State – 2010 (ECCCNYS – 2010), effective 12/28/10. Thank you for taking the time to complete our survey.

Service _____ **Location** _____ **Date** _____

1. What is your occupation?
    a. Code Official
    b. Architect
    c. Engineer
    d. General Contractor
    e. Builder
    f. Electrician
    g. HVAC Contractor
    h. HERS Rater
    i. 3rd Party Inspector
    j. Realtor
    k. Other (specify):
2. Does your work mostly involve low-rise residential buildings (less than 3 stories), commercial buildings (including multifamily buildings more than 3 stories), or both?
    a. Low-rise residential only
    b. Commercial only
    c. Both

3. How did you find out about this course? (Circle all that apply)
    a. http://www.nyserdacodetraining.com
    b. New York State Builders Association (NYSBA)
    c. Department of State (DOS)
    d. New York State Energy Research and Development Authority (NYSERDA)
    e. Colleague
    f. Word of Mouth
    g. Professional Organization
    h. Other (specify):
4. What is your main reason for taking this course?
    a. Required by my professionalorganization
    b. Required by my employer/job
    c. Improve professional knowledge
    d. Continuing Education Credits
    e. Other (specify):
5. How would you rate your knowledge of the ECCCNYS – 2010? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "very familiar."

    [Enter number 0 – 10] ____
6. How would you rate the ease of complying with the energy code's residential provisions? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "very familiar."

    [Enter number 0 – 10] ____
7. How would you rate the ease of complying with the energy code's commercial provisions? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "very familiar."

    [Enter number 0 – 10] ____
8. How would you rate the importance of having the ECCCNYS – 2010 enforced in **new** buildings in your community? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____
9. How would you rate the importance of having the ECCCNYS – 2010 enforced in **existing** buildings being **renovated** in your community? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____
10. How large a role does the energy code play in your work?

a. Very large

b. Large

c. Small

d. None at all

11. How important do you think it is for new buildings to comply with the ECCCNYS – 2010? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____

12. How important do you think it is for the stringency of the ECCCNYS to increase in the future? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____

Thank you for your time. NYSERDA greatly appreciates your feedback.

Training and Support Service

Post Training and Support Service Survey

All questions are relevant only to the training or support services received relative to your adherence to or enforcement of the Energy Conservation Construction Code of New York State – 2010 (ECCCNYS-2010). Thank you for taking the time to complete our survey. Your response will allow us to better design and provide future plan review support services. For multiple choice questions, please circle your response.

The study team will keep the information collected private to the extent permitted by law. NYSERDA's analysis will only use summary level data and will not identify individual organizations.

1. What is the name of the most recent ECCCNYS-2010 training and/or support service that you attended/received?

   _____

2. In what month and year did this training and/or support service take place? Please Provide your answer in MM/YY format.

   _____

3. What is your occupation?

   a. Code Official
   b. Architect
   c. Builder
   d. Electrician
   e. Engineer
   f. General Contractor
   g. HERS Rater
   h. HVAC Contractor
   i. Real Estate Agent
   j. Third Party Inspector
   k. Other [Please be specific] _____

4. Does your work mostly involve low-rise residential buildings (3 stories or less), commercial buildings (including multifamily buildings more than 3 stories), or both about equally?

   a. Low-rise residential only
   b. Commercial only
   c. Both

5. Thinking about your overall experience with building codes, how familiar are you with general energy conservation requirements? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "extremely familiar."

   [Enter number 0 – 10] ___

6. How would you rate the quality of the training or support service you recently received? Please enter a number between 0 and 10, where 0 means "extremely poor" and 10 means "extremely good."
    a. Clarity: **[Enter number 0 – 10]** ____
    b. Content: **[Enter number 0 – 10]** ____
    c. Usefulness: **[Enter number 0 – 10]** ____
    d. Overall: **[Enter number 0 – 10]** ____

7. How would you rate your specific knowledge of the provisions of the ECCCNYS-2010 **before** receiving the training or support service? Please enter a number between 0 and 10, where 0 means "not at all knowledgeable" and 10 means "extremely knowledgeable."

    [Enter number 0 – 10] ____

8. How would you rate your specific knowledge of the provisions of the ECCCNYS-2010 **after** receiving the training or support service? Please enter a number between 0 and 10, where 0 means "not at all knowledgeable" and 10 means "extremely knowledgeable."

    [Enter number 0 – 10] ____

9. One training and support service goal was to provide participants with an overview of the plan review process related to implementation of or compliance with the ECCCNYS-2010. On a scale of 0 to 10, where 0 indicates "not at all helpful" and 10 indicates "extremely helpful," how helpful was the overview?

    [Enter number 0 – 10] ____

10. What, if any, are the main sections of the ECCCNYS-2010 applicable to residential and commercial buildings that you heard about for the first time through this training or support service? Please indicate whether the section applies to residential or commercial buildings.

_____

_____

11. What was the most useful part of this training or support service for you?
    [Please be specific]

_____

_____

12. Had you previously received training and/or support services on the ECCCNYS-2010?
    a. Yes

    Name of Service 1 _____

    Month/Yr of Service 1 _____

    Name of Service 2 _____

    Month/Yr of Service 2 _____

    Name of Service 3 _____

    Month/Yr of Service 3 _____

b. No
c. Don't know

The following questions have been designed to better understand the types of buildings you work with.

13. What is your best estimate of the share of buildings in the following categories for which you apply or enforce compliance with ECCCNYS-2010? [Total needs to add to 100%]

a.	1 and 2 family	___%
b.	Multifamily (3 stories or less)	___%
c.	Multifamily (more than 3 stories)	___%
d.	Non-residential (commercial)	___%
	Total	100%

14. What is the typical square footage of the 1- and 2-family residential buildings for which you apply or enforce ECCCNYS-2010?
[Skip this question if you do not work with 1- and 2-family residential buildings]

    a. Less than 1,000 square feet
    b. 1,000 to 1,999
    c. 2,000 to 2,999
    d. 3,000 to 3,999
    e. 4,000 to 5,999
    f. 6,000 or more

15. How many units are in the typical multifamily building for which you apply or enforce ECCCNYS-2010?
[Skip this question if you do not work with multifamily buildings]

    a. 3-5
    b. 6-10
    c. 11-20
    d. 21-50
    e. 51-100
    f. More than 100

16. What are the principal occupancies of the commercial buildings for which you apply or enforce ECCCNYS-2010? [Please circle all that apply]
[Skip this question if you do not work with commercial buildings]

    a. Education
    b. Food Sales
    c. Food Service
    d. Health Care
    e. Lodging
    f. Retail/Mercantile
    g. Office
    h. Public Assembly
    i. Public Order and Safety
    j. Religious Worship
    k. Service
    l. Warehouse and Storage
    m. Manufacturing (Identify Industry Type e.g., chemical, food, paper, etc.)
    n. Vacant
    o. Housing

17. What is the typical square footage of the commercial buildings for which you apply or enforce ECCCNYS-2010? **[Skip this question if you do not work with commercial buildings]**

    a. Less than 5,000 square feet
    b. 5,000 to 19,999
    c. 20,000 to 49,999
    d. 50,000 to 99,999
    e. 100,000 to 199,999
    f. 200,000 to 499,999
    g. 500,000 or more

18. What specific improvements did you make in how you enforce or comply with the ECCCNYS-2010 as a result of the training and/or support service?

_____

_____

19. What areas would you like to know more about regarding the ECCCNYS-2010 for residential or commercial buildings?

_____

_____

20. What other areas would you like future training and/or support services to cover to help you improve ECCCNYS-2010 enforcement or compliance?

_____

_____

21. What additional feedback would you like to provide to help improve this training or support service?
    [Please be specific]

_____

_____

22. Please provide your contact information:

    Name: _____

    Email: _____

Thank you for your time. NYSERDA greatly appreciates your feedback

Date: **October 24, 2011**

Attn: **Training Contractors**

From: **NYSERDA and The Cadmus Group, Inc.**

Re: **Survey Packet for Energy Code Training and Support Services**

This document contains surveys that are to be used at NYSERDA-sponsored in-person trainings and support services. The following is a description of the surveys that are to be administered at these events and directions for distribution and collection of materials.

Pre Surveys and Post Surveys

There are two generic surveys, a pre survey and a post survey, that are to be administered at all in person trainings and support services. The surveys are applicable to all code enforcement officials and implementation stakeholders who receive NYSERDA-sponsored energy code training or services .

Directions for Survey Implementation

1) ***Print and staple together the survey packet consisting page number 1 through 8.***

2) ***Provide survey packet to all participants upon arrival before the beginning of training or support service session.***

3) ***Ask participants to fill out pre-survey before session begins, and post-survey immediately after session is completed.***

4) ***Instruct participants to submit completed survey packets upon completion and collect packets from participants before they leave.***

5) ***Send all collected survey packets to NYSERDA using the provided pre-addressed envelope(s).***

6) ***Following each in person training or support service, please send all collected survey packets to NYSERDA in the provided pre-stamped envelopes.***

Contact Information

For questions pertaining to survey logistics or to report any problems with survey materials, please contact the following NYSERDA representative:

Mike Bello
(518) 862-1090 Ext. 3495
Email: MB6@nyserda.org
Mailing Address: 15 Columbia Circle
Albany, NY 12203-6399

For questions pertaining to survey content or quality, please contact the following Cadmus representative:

Hendrik Broekelschen
503-467-7163
E-mail: Hendrik.Broekelschen@cadmusgroup.com

Thank you for your time and efforts!

NYSERDA ENERGY CODES TRAINING

To Training/Service Participants:

Hello and thank you for attending this New York State Energy Research and Development Authority (NYSERDA)-sponsored training or support service event. Please assist us in this survey effort so that we can better tailor these services for you on the Energy Conservation Construction Code of New York State – 2010 (ECCCNYS – 2010), effective 12/28/10.

Directions for completing the survey:

1. ***Before the training or support service begins, please fill out the next three pages that contain the Pre Training and Support Service Survey. Once you have reached the 'Please Stop Here' checkpoint, wait until the completion of the training or support service to continue on to the Post Training and Support Survey.***

2. ***After the training or support service ends, please fill out the rest of this packet to complete the Post Training and Support Survey.***

3. ***Once the training or service is over and the survey packet is completed, please submit the entire packet to the trainer or service provider.***

Thank you for your time and effort!

Training and Support Service

Pre Training and Support Service Survey

Please answer each of the following questions so that we can better tailor training for you on the Energy Conservation Construction Code of New York State – 2010 (ECCCNYS – 2010), effective 12/28/10. Thank you for taking the time to complete our survey. For multiple choice questions, please circle the letter for your response.

The study team will keep the information collected private to the extent permitted by law. NYSERDA's analysis will only use summary level data and will not identify individuals.

Service _____ **Location** _____ **Date** _____

1. What is your occupation?

    a. Code Official
    b. Architect
    c. Builder
    d. Electrician
    e. Engineer
    f. General Contractor
    g. HERS Rater
    h. HVAC Contractor
    i. Real Estate Agent
    j. Third Party Inspector
    k. Other [Please be specific] _____

2. Does your work mostly involve low-rise residential buildings (less than 3 stories), commercial buildings (including multifamily buildings more than 3 stories), or both about equally?

    a. Low-rise residential only
    b. Commercial only
    c. Both

3. How did you find out about this course? (Select all that apply)

    a. http://www.nyserdacodetraining.com
    b. New York State Builders Association (NYSBA)
    c. Department of State (DOS)
    d. New York State Energy Research and Development Authority (NYSERDA)
    e. Colleague
    f. Word of Mouth
    g. Professional Organization
    h. Other (specify):_____

4. What is your main reason for taking this course?

    a. Required by my professional organization
    b. Required by my employer/job
    c. Improve professional knowledge
    d. Continuing Education Credits
    e. Other (specify):_____

5. How would you rate your knowledge of the ECCCNYS – 2010? Please enter a number between 0 and 10, where 0 means "not at all knowledgeable" and 10 means "extremely knowledgeable."

    [Enter number 0 – 10] ____

6. How would you rate the ease of complying with the energy code's residential provisions? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "very familiar."

    [Enter number 0 – 10] ____

7. How would you rate the ease of complying with the energy code's commercial provisions? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "very familiar."

    [Enter number 0 – 10] ____

8. How would you rate the importance of having the ECCCNYS – 2010 enforced in **new** buildings in your community? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____

9. How would you rate the importance of having the ECCCNYS – 2010 enforced in **existing** buildings being **renovated** in your community? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____

10. How large a role does the energy code play in your work?

    a. Very large
    b. Large
    c. Small
    d. None at all

11. How important do you think it is for new buildings to comply with the ECCCNYS – 2010? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____

12. How important do you think it is for the stringency of the ECCCNYS to increase in the future? Please enter a number between 0 and 10, where 0 means "not at all important" and 10 means "very important."

    [Enter number 0 – 10] ____

Please provide your contact information below:

Participant Name:_____

Participant Email: _____

[Please Stop Here]

The following pages are to be filled out after your training or support services.

Training and Support Service

Post Training and Support Service Survey

All questions are relevant only to the training or support services received relative to your adherence to or enforcement of the Energy Conservation Construction Code of New York State – 2010 (ECCCNYS-2010). Thank you for taking the time to complete our survey. Your response will allow us to better design and provide future plan review support services. For multiple choice questions, please circle your response.

The study team will keep the information collected private to the extent permitted by law. NYSERDA's analysis will only use summary level data and will not identify individual organizations.

Service _____ **Location** _____ **Date** _____

1. Thinking about your overall experience with building codes, how familiar are you with general energy conservation requirements? Please enter a number between 0 and 10, where 0 means "not at all familiar" and 10 means "extremely familiar."

   [Enter number 0 – 10] ___

2. How would you rate the quality of the training or support service you recently received? Please enter a number between 0 and 10, where 0 means "extremely poor" and 10 means "extremely good."
   a. Clarity: **[Enter number 0 – 10]** ____
   b. Content: **[Enter number 0 – 10]** ____
   c. Usefulness: **[Enter number 0 – 10]** ____
   d. Overall: **[Enter number 0 – 10]** ____

3. How would you rate your specific knowledge of the provisions of the ECCCNYS-2010 (energy code) **after** receiving the training or support service? Please enter a number between 0 and 10, where 0 means "not at all knowledgeable" and 10 means "extremely knowledgeable."

   [Enter number 0 – 10] ____

4. One training and support service goal was to provide participants with an overview of the plan review process related to implementation of or compliance with the ECCCNYS-2010. On a scale of 0 to 10, where 0 indicates "not at all helpful" and 10 indicates "extremely helpful," how helpful was the overview?

   [Enter number 0 – 10] ____

5. What, if any, are the main sections of the ECCCNYS-2010 applicable to residential and commercial buildings that you heard about for the first time through this training or support service? Please indicate whether the section applies to residential or commercial buildings.

_____

_____

6. What was the most useful part of this training or support service for you?
   [Please be specific]

_____

_____

7. Have you previously received training and/or support services on the ECCNYS-2010?

   a. Yes **When**_____

      Name of Support Service 1 _____

      Name of Support Service 2 _____

      Name of Support Service 3 _____

   b. No
   c. Don't know

8. Are you planning to use other ECCCNYS-2010 training or support services this year?

   a. Yes **When**_____
   b. No
   c. Don't know

The following questions have been designed to better understand the types of buildings you work with.

9. What is your best estimate of the share of buildings in the following categories for which you apply or enforce compliance with ECCCNYS-2010? [Total needs to add to 100%]

    a. 1 and 2 family ___%
    b. Multifamily (less than 3 stories) ___%
    c. Multifamily (3 stories and above) ___%
    d. Non-residential (commercial) ___%
    Total 100%

10. What is the typical square footage of the 1- and 2-family residential buildings for which you apply or enforce ECCCNYS-2010?
    [Skip this question if you do not work with 1- and 2-family residential buildings]

    a. Less than 1,000 square feet
    b. 1,000 to 1,999
    c. 2,000 to 2,999
    d. 3,000 to 3,999
    e. 4,000 to 5,999
    f. 6,000 or more

11. How many units are in the typical multifamily building for which you apply or enforce ECCCNYS-2010? **[Skip this question if you do not work with multifamily buildings]**

    a. 3-5
    b. 6-10
    c. 11-20
    d. 21-50
    e. 51-100
    f. 100 or more

12. What are the principal occupancies of the commercial buildings for which you apply or enforce ECCCNYS-2010? [Please circle all that apply]
    [Skip this question if you do not work with commercial buildings]

    a. Education
    b. Food Sales
    c. Food Service
    d. Health Care
    e. Lodging
    f. Retail/Mercantile
    g. Office
    h. Public Assembly
    i. Public Order and Safety
    j. Religious Worship
    k. Service
    l. Warehouse and Storage
    m. Manufacturing (Identify Industry Type e.g., chemical, food, paper, etc.)
    n. Vacant
    o. Housing

13. What is the typical square footage of the commercial buildings for which you apply or enforce ECCCNYS-2010? **[Skip this question if you do not work with commercial buildings]**

    a. Less than 5,000 square feet
    b. 5,000 to 19,999
    c. 20,000 to 49,999
    d. 50,000 to 99,999
    e. 100,000 to 199,999
    f. 200,000 to 499,999
    g. 500,000 or more

14. What areas would you like to know more about regarding the ECCCNYS-2010 for residential or commercial buildings?

_____

_____

15. What other training or support services would you like to see offered with regard to ECCCNYS-2010?

_____

_____

16. What additional feedback would you like to provide to help improve this training or support service?
    [Please be specific]

_____

_____

Thank you for your time. NYSERDA greatly appreciates your feedback

NYSERDA Energy Efficiency Program Survey

Thank you for participating in this study of energy efficiency programs administered by the New York State Energy Research and Development Authority (NYSERDA). We are asking you to complete this survey because your organization has participated in the Energy Efficiency Program for Municipalities, Schools, Hospitals, Public Colleges and Universities, and Non-Profits (RFP 1613), funded by NYSERDA's ARRA (the American Recovery and Reinvestment Act of 2009, also commonly referred to as the "Recovery Act" or "Stimulus" Funding) program.

NYSERDA is interested in your answers about why you participated in the NYSERDA ARRA program and how it influenced your energy efficiency project. These questions will help us understand the overall impacts of the American Recovery and Reinvestment Act of 2009. NYSERDA has contracted with independent research firms, The Cadmus Group, Inc. and NMR Group, Inc., to conduct the study. The study team of The Cadmus Group, Inc. and NMR Group, Inc., as independent research firms, will keep the information private to the extent permitted by law.

NYSERDA's analysis will only use summary level data and will not identify individual respondents or firms. If you have any questions about the survey, please contact Mark Lesiw of The Cadmus Group either by phone (303-389-2533) or by email (Mark.Lesiw@CadmusGroup.com).

If you have any concerns about the nature of this study and the reasons you are being asked to respond to it, please contact Rebecca Reed of NYSERDA either by phone (866-697-3732 ext. 3559) or by email (rlr@nyserda.org).

Completing this survey:
• Please carefully read all questions and directions
• Respond to all questions to the best of your ability
• The estimated length of the survey is 10 minutes. Y

our participation in this study supports energy efficiency development in New York.

Thank you very much for your help!

All fields with an asterisk (*) are required.

Introduction

First we would like to ask you a few questions about your energy efficiency project and how you found out about the NYSERDA ARRA program.

Awareness

*1. How did you hear about the NYSERDA ARRA Program? [MARK ALL THAT APPLY] (*Required)

Select at least 1 choices.

- ☐ 1. Through NYSERDA's FlexTech program
- ☐ 2. Through participation in other NYSERDA program
- ☐ 3. Contractor / installer
- ☐ 4. Program marketing materials
- ☐ 5. Program outreach sessions
- ☐ 6. Email or mailing from NYSERDA
- ☐ 7. Webinar
- ☐ 8. NYSERDA website
- ☐ 9. Story in the media
- ☐ 10. Colleague, friend, family -- word of mouth
- ☐ 98. Don't know
- ☐ Other: _____

Motivation

*2. Why did you apply for Recovery Act funds from NYSERDA to implement this project? Please focus your answer on why you applied for the FUNDS, not why you decided to install the measure(s). (*Required)

*3. To what extent was your decision to APPLY for funds from NYSERDA affected by the fact that the funds were provided by the Recovery Act? Please use a scale from 1 to 5 in which 3 is not a factor at all, 1 is a critical negative factor and 5 is a critical positive factor in your decision to apply. (*Required)

Select one.

- ○ 1. A critical negative factor
- ○ 2. Somewhat of a negative factor
- ○ 3. Not at all a factor
- ○ 4. Somewhat of a positive factor
- ○ 5. A critical positive factor
- ○ 98. Don't know

*4. To what extent was your decision to apply for funds from NYSERDA affected by WHEN the funds would become available? Please use a scale from 1 to 5 in which 3 is not a factor at all, 1 is a critical negative factor and 5 is a critical positive factor in your decision to apply. (*Required)

Select one.

- ○ 1. A critical negative factor
- ○ 2. Somewhat of a negative factor
- ○ 3. Not at all a factor
- ○ 4. Somewhat of a positive factor
- ○ 5. A critical positive factor
- ○ 98. Don't know

*5. Prior to participating in the NYSERDA program, had you participated in any other NYSERDA energy efficiency, energy conservation, or renewable energy program? (*Required)

Select one.

- ○ 1. Yes (Go to question number 6.)
- ○ 2. No (Go to question number 9.)
- ○ 98. Don't know (Go to question number 9.)

*6. In what type of NYSERDA programs have you participated? [Please mark all that apply] (*Required)

Select at least 1 choices.

- ☐ 1. Energy audit (Answer question number 6.1.)
- ☐ 2. Technical study (Answer question number 6.1.)
- ☐ 3. New construction (Answer question number 6.1.)
- ☐ 4. Equipment replacement incentive (Answer question number 6.1.)
- ☐ 5. Renewable energy (Answer question number 6.1.)
- ☐ Other (Answer question number 6.1.)

*6.1 [Please specify the NYSERDA program] (*Required)

_____

*7. On a scale from 1 to 5, how influential was your participation in other NYSERDA programs in your decision to apply to this program? Please use a scale from 1 to 5 in which 1 illustrates a previous negatively influential experience, 3 was not at all influential and 5 is positively influential. (*Required)

Select one.

- ○ 1. Negatively influential
- ○ 2. Somewhat negatively influential
- ○ 3. Not at all influential
- ○ 4. Somewhat positively influential
- ○ 5. Positively influential
- ○ 98. Don't know

*8. Was/were the measure(s) you installed with the most recent NYSERDA assistance recommended in any energy audit or conservation study you had previously completed through a NYSERDA program? (*Required)

Select one.

- ○ 1. Yes [PLEASE SPECIFY THE NYSERDA PROGRAM] (Answer question number 8.1.)
- ○ 2. No

*8.1 Please specify the NYSERDA program. (*Required)

Alternative and Additional Funding & Economy

Next we have some questions about the funding sources for your energy efficiency project.

*9. Approximately what percentage of the total project budget did the NYSERDA Recovery Act funds provide? (*Required)

Select one.

- ○ 1. NYSERDA Recovery Act Funding did not cover any of the project budget (0%) (Go to question number 10.)
- ○ 2. NYSERDA Recovery Act Funding covered a portion of the project budget _____% (Answer question number 9.1.) (Go to question number 10.)
- ○ 3. NYSERDA Recovery Act Funding covered the entire budget of the project (100%) (Go to question number 11.)

*9.1 [Please record percent] (*Required)

---

*10. Did any of the other financing you received for this project require that you obtain matching funds from other sources? (*Required)

Select one.

- ○ 1. Yes (Answer question number 10.1.)
- ○ 2. No

*10.1 To what extent was your decision to apply for Recovery Act funds from NYSERDA affected by the requirement from other sources to obtain matching funds for the project? Please use a scale from 1 to 5 where 1 is a critical negative factor and 5 is a critical positive factor. (*Required)

Select one.

- ○ 1. A critical negative factor
- ○ 2. Somewhat of a negative factor
- ○ 3. Not at all a factor
- ○ 4. Somewhat of a positive factor
- ○ 5. A critical positive factor
- ○ 98. Don't know

*11. BEFORE applying for Recovery Act funds from NYSERDA, had you ATTEMPTED to secure financing for this project? (*Required)

Select one.

- ○ 1. Yes (Go to question number 12.)
- ○ 2. No (Go to question number 17.)

*12. Had you SUCCESSFULLY SECURED at least some other financing for this project BEFORE applying for the NYSERDA funds? (*Required)

Select one.

- ○ 1. Yes (Go to question number 13.)
- ○ 2. No (Go to question number 17.)

*13. How did you use the previously secured funds? [Mark All That Apply] (*Required)

Select at least 1 choices.

- ☐ 1. Used them to pay for part of the costs of the energy efficiency project (Go to question number 17.)
- ☐ 2. Declined the funds BEFORE receiving NYSERDA Recovery Act funds (Go to question number 15.)
- ☐ 3. Declined the funds AFTER receiving NYSERDA Recovery Act funds (Go to question number 15.)
- ☐ 4. Lost the funds (Go to question number 14.)
- ☐ 5. Have not used previously secured funds yet (Go to question number 17.)
- ☐ 6. Used the previously secured funds for another project (Go to question number 17.)
- ☐ 98. Don't know

*14. Did Recovery Act funds from NYSERDA substitute for the funds that you LOST? (*Required)

Select one.

- ○ 1. Yes, Recovery Act funds from NYSERDA substituted for the lost funds (Go to question number 17.)
- ○ 2. No, we substituted the lost funds from a source other than NYSERDA (Go to question number 0.)
- ○ 3. No, we did not substitute the funds but the project was still able to move forward (Go to question number 0.)
- ○ Other: (Go to question number 17.)

_____

E5. Directions

15. Did NYSERDA Recovery Act substitute for the funds that you DECLINED, or did something else happen?

Select one.

- ○ 1. Yes, NYSERDA Recovery Act funds substituted for the lost funds
- ○ 2. No, we substituted the lost funds from a source other than NYSERDA
- ○ 3. No, we did not substitute the funds but the project was still able to move forward
- ○ Other:

_____

16. If the NYSERDA Recovery Act funds had not been available, what is the likelihood that you would have still completed this energy efficiency project? Please use a scale of 1 to 5 in which 1 is “not at all likely” and 5 is “very likely.”

Select one.

- ○ 1. Not at all likely
- ○ 2. Somewhat unlikely
- ○ 3. Neither likely or unlikely
- ○ 4. Somewhat likely
- ○ 5. Very likely
- ○ 98. Don't know

*17. Did the NYSERDA Recovery Act award allow you to divert funds from the energy efficiency project to other projects in need of financing? (*Required)

Select one.

- ○ 1. Yes (Go to question number 18.)
- ○ 2. No (Go to question number 0.)

*18. Did any of these diverted funds finance the installation of additional renewable energy or energy efficiency projects? (*Required)

Select one.

- ○ 1. Yes (Answer question number 18.1.) (Go to question number 19.)
- ○ 2. No (Go to question number 0.)

*18.1 Please explain what type of renewable or energy efficiency projects you completed with the diverted funds, noting if the measure also received funds from another NYSERDA or utility program. (*Required)

_____

_____

_____

_____

_____

*19. If the NYSERDA Recovery Act funds had not been available, what is the likelihood that you would have diverted internal funds to other energy efficiency projects? Please use a scale of 1 to 5, where 1 = “not at all likely” and 5 = “very likely.” (*Required)

Select one.

- ○ 1. Not at all likely
- ○ 2. Somewhat unlikely
- ○ 3. Neither likely or unlikely
- ○ 4. Somewhat likely
- ○ 5. Very likely
- ○ 98. Don't know

Project Planning

20. Prior to participating in the NYSERDA Recovery Act program, were you planning to install similar energy efficiency measures?

Select one.

- ○ 1. Yes (Go to question number 21.)
- ○ 2. No (Go to question number 22.)

*21. Below is a list of statements describing the planning process. Please indicate which statement BEST describes which point in the planning process this project was in before you participated in the NYSERDA Recovery Act program. (*Required)

Select one.

- ○ 1. We had no formal plans for the project. We had some preliminary, internal discussions but no plans and no contact with a vendor, contractor or installer.
- ○ 2. We had taken initial steps toward considering the high efficiency measures, such as requesting information from or generally discussing high efficiency options with a vendor, contractor, or installer
- ○ 3. We had in-depth discussions of specific types of high efficiency equipment, including the positive and negative attributes and costs.
- ○ 4. We had identified specific equipment manufacturers and models that we wanted to install, but had not yet begun the budgeting process.
- ○ 5. We had identified specific equipment, manufacturers and models; however, budgets did not support the completion of the project.
- ○ 6. We had identified specific equipment, manufacturers and models and incorporated the project into our budget.

*22. Did your participation in the NYSERDA Recovery Act program influence EITHER the decision to implement the project or install the exact type, size, or amount of high efficiency measures included in the project? (*Required)

Select one.

- ○ 1. Yes (Go to question number 23.)
- ○ 2. No (Go to question number 24.)

*23. How did the NYSERDA Recovery Act program and funding influence your decision to implement this project? Please indicate which statement BEST describes the influence of the NYSERDA program on your decision. (*Required)

Select one.

- ○ 1. The NYSERDA program funding had no influence on the decision. All the measures would have been installed at the same efficiencies and in the same amounts without the program funding.
- ○ 2. The NYSERDA program funding helped in making the final decision on the high efficiency measures that had already been thoroughly considered.
- ○ 3. The NYSERDA program funding lent credibility to the decision to invest in high efficiency.
- ○ 4. The NYSERDA program funding was a major driver in expanding the quantity, scope, or efficiency of the equipment.
- ○ 5. The NYSERDA program funding was the primary reason that the high efficiency measures were installed.

*24. On a scale of 1 to 5, in which 1 is not at all important and 5 very important, please indicate how important the NYSERDA ARRA program was in your decision to install high efficiency measures at this site. (*Required)

Select one.

- ○ 1. Not at all important
- ○ 2. Somewhat unimportant
- ○ 3. Neither important or unimportant
- ○ 4. Somewhat important
- ○ 5. Very important
- ○ 98. Don't know

25. What is the likelihood that you would have installed this exact same high efficiency equipment at this time if you had not received funding through the NYSERDA program?

Select one.

- ○ 1. Definitely would NOT have incorporated measure of the same high level of efficiency (0%)
- ○ 2. May have incorporated measure of the same high level of efficiency, even without the program. About what percent likelihood? _____% (Answer question number 25.1.)
- ○ 3. Definitely would have incorporated measure of the same high level of efficiency anyway (100%)

25.1 [Please record percent]

_____

26. Next, please think about the scale of the energy efficiency measures you installed. What percentage of these high efficiency measures would you have incorporated if you had not received the NYSERDA Recovery Act funds?

Select one.

- ○ 1. Definitely would NOT have incorporated ANY of these measures (0%)
- ○ 2. May have incorporated SOME of these measures, even without the program. About what percent of measures would have installed anyway? _____% (Answer question number 26.1.)
- ○ 3. Definitely would have incorporated ALL of these measures even without the program (100%)

26.1 [Please record percent]

_____

*27. Please explain what the project would have been like without the NYSERDA ARRA funds? (*Required)

_____

_____

_____

_____

_____

*28. What is the principal business activity where the high efficiency measures were installed? (*Required)

Select one.

○ 1. Education	(Go to question number 29.)
○ 2. Food Sales	(Go to question number 31.)
○ 3. Food Service	(Go to question number 31.)
○ 4. Health Care	(Go to question number 30.)
○ 5. Lodging	(Go to question number 31.)
○ 6. Retail/Mercantile	(Go to question number 31.)
○ 7. Office	(Go to question number 31.)
○ 8. Public Assembly	(Go to question number 31.)
○ 9. Public Order and Safety	(Go to question number 31.)
○ 10. Religious Worship	(Go to question number 31.)
○ 11. Service	(Go to question number 31.)
○ 12. Warehouse and Storage	(Go to question number 31.)
○ 13. Manufacturing (Identify Industry Type e.g., chemical, food, paper, etc.)	(Go to question number 31.)
○ 14. Vacant	(Go to question number 31.)
○ Other: _____	(Go to question number 31.)

*29. Approximately how many students attend this school? (*Required)

Select one.

If answered, go to question number 31.

- ○ 1. fewer than 100
- ○ 2. 100 to 249
- ○ 3. 250 to 499
- ○ 4. 500 to 749
- ○ 5. 750 to 999
- ○ 6. 1,000 or More

*30. Approximately how many hospital beds are in this health care facility? (*Required)

Select one.

- ○ 1. Zero
- ○ 2. 1 to 5
- ○ 3. 5 to 9
- ○ 4. 10 to 19
- ○ 5. 20 to 49
- ○ 6. 50 to 99
- ○ 7. 100 to 249
- ○ 8. 250 or More

*31. Approximately, when was this building originally built? (*Required)

Select one.

- ○ 1. Before 1960
- ○ 2. 1961-1970
- ○ 3. 1971-1980
- ○ 4. 1981-1990
- ○ 5. 1991-2000
- ○ 6. 2001-2005
- ○ 7. After 2005

*32. What is the approximate square footage of the building where the energy efficient measures were installed? (*Required)

Select one.

- ○ 1. Less than 1,000 square feet
- ○ 2. 1,000 to 4,999
- ○ 3. 5,000 to 14,999
- ○ 4. 15,000 to 24,999
- ○ 5. 25,000 to 49,999
- ○ 6. 50,000 to 99,999
- ○ 7. 100,000 to 199,999
- ○ 8. 200,000 to 499,999
- ○ 9. 500,000 or more

*33. Approximately how many full-time equivalent workers are employed at this facility? (*Required)

Select one.

- ○ 1. fewer than 5
- ○ 2. 5 to 9
- ○ 3. 10 to 19
- ○ 4. 20 to 49
- ○ 5. 50 to 99
- ○ 6. 100 to 249
- ○ 7. 250 or More

NYSERDA ARRA Energy Efficiency Programs, Onsite/Telephone Participant Survey
RFP 10 and RFP 1613

FINAL

DIRECTIONS: The onsite technician will administer this survey at an appropriate time during the site visit. It is **imperative** that the technician reads the questions and marks the responses. There are some response categories that we have coded for ease of administration but seeing them may bias the respondents' answers. **Do not** give the respondent the survey to fill out while performing other site visit work.

READ TO THE RESPONDENT: I now have some questions to ask about why you participated in the NYSERDA ARRA program and how it influenced this project. These questions will help us understand the overall impacts of the American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Recovery Act" or "Stimulus" Funding. Please respond to all questions to the best of your ability. All of your answers will be kept completely confidential to the extent permitted by law. It is our intent to aggregate this survey data with all of the other survey participants to represent the entire program population. If you are not the decision maker in this process, would you be able to assist me in talking with that person as well?

Introduction

First we would like to ask you a few questions about your energy efficiency project and how you found out about the NYSERDA ARRA program.

Awareness

A1. How did you hear about the NYSERDA ARRA Program? [**PROMPT IF NEEDED; MARK ALL THAT APPLY]**

1. Through NYSERDA's FlexTech program
2. Through participation in other NYSERDA program
3. Contractor / installer
4. Program marketing materials
5. Program outreach sessions
6. Email or mailing from NYSERDA
7. Webinar
8. NYSERDA website
9. Story in the media
10. Colleague, friend, family -- word of mouth

-97 Other [PLEASE SPECIFY]

-98 Don't know

Motivation

M1. Why did you apply for Recovery Act funds from NYSERDA to implement this project? Please focus your answer on why you applied for the FUNDS, not why you decided to install the measure(s). [DO

NOT READ RESPONSES; HAVE RESPONDENT BE SPECIFIC; CHOOSE FROM RESPONSES PROVIDED OR FILL IN RESPONSE IF NOT AMONG LISTED RESPONSES; ALLOW MORE THAN ONE RESPONSE]

1. Could not find funding from other sources
2. Contractor suggested I apply
3. Other funding sources required me to match or leverage funds
4. Thought chances of getting funded were good
5. Looking to accelerate project
6. Could not afford to do the work without funding

-97 Other [PLEASE SPECIFY]

-98 Don't know

M2. To what extent was your decision to APPLY for funds from NYSERDA affected by the fact that the funds were provided by the Recovery Act? Please use a scale from 1 to 5 in which 3 is not a factor at all, 1 is a critical negative factor and 5 is a critical positive factor in your decision to apply. Please think only about your decision to apply for the funds, not your experiences after having received the funds. [TECHNICIAN –NEGATIVE MEANS THAT IT WAS A DRAWBACK OF PARTICIPATION; POSITIVE MEANS IT WAS A DRIVER TO PARTICIPATION]

1. A critical negative factor
2. Somewhat of a negative factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor

-98 Don't know

M3. To what extent was your decision to apply for funds from NYSERDA affected by WHEN the funds would become available? Please use a scale from 1 to 5 in which 3 is not a factor at all, 1 is a critical negative factor and 5 is a critical positive factor in your decision to apply. [TECHNICIAN –NEGATIVE MEANS THAT IT WAS A DRAWBACK OF PARTICIPATION; POSITIVE MEANS IT WAS A DRIVER TO PARTICIPATION]

1. A critical negative factor
2. Somewhat of a negative factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor

-98 Don't know

M4. Prior to participating in the NYSERDA program, had you participated in any other NYSERDA energy efficiency, energy conservation, or renewable energy program?

1. Yes [GO TO M5]
2. No [GO TO AF1]

- 98 Don't know [GO TO **Error! Reference source not found.**]

M5. [IF YES TO M4] In what type of NYSERDA programs have you participated? **Please mark all that apply**.

1. Energy audit [PLEASE SPECIFY THE NYSERDA PROGRAM]
2. Technical study [PLEASE SPECIFY THE NYSERDA PROGRAM]
3. New construction [PLEASE SPECIFY THE NYSERDA PROGRAM]
4. Equipment replacement incentive [PLEASE SPECIFY THE NYSERDA PROGRAM]
5. Renewable energy [PLEASE SPECIFY THE NYSERDA PROGRAM]

-97 Other [PLEASE SPECIFY]

M6. [IF YES TO M4] On a scale from 1 to 5, how influential was your participation in other NYSERDA programs in your decision to apply to this program? Please use a scale from 1 to 5 in which 1 illustrates a previous negatively influential experience, 3 was not at all influential and 5 is positively influential. [TECHNICIAN – NEGATIVE WOULD MEAN THEY HAD A BAD EXPERIENCE AND WERE HESITANT TO TAKE PART BECAUSE OF IT; POSITIVE WOULD MEAN THEY HAD A GOOD EXPERIENCE AND IT ENCOURAGED THEM TO TAKE PART]

1. Negatively influential
2. Somewhat negatively influential
3. Not at all influential
4. Somewhat positively influential
5. Positively influential

M7. [IF YES TO M4] Was/were the measure(s) you installed with the NYSERDA Recovery Act assistance recommended in any energy audit or conservation study you had previously completed through a NYSERDA program?

1. Yes [PLEASE SPECIFY THE NYSERDA PROGRAM]
2. No

Alternative and Additional Funding & Economy

Next we have some questions about the funding sources for your energy efficiency project.

AF1. Approximately what percentage of the total project budget did the NYSERDA Recovery Act funds provide?

[RECORD %]

1. NYSERDA Recovery Act Funding did not cover any of the project budget (0%)

2. NYSERDA Recovery Act Funding covered a portion of the project budget _____%

3. NYSERDA Recovery Act Funding covered the entire budget of the project (100%) [GO TO E1]

AF2. Did any of the other financing you received for this project require that you obtain matching funds from other sources?

1. Yes [GO TO AF3]
2. No [GO TO E1]

AF3. [IF YES TO AF2] To what extent was your decision to apply for Recovery Act funds from NYSERDA affected by the requirement from other sources to obtain matching funds for the project? Please use a scale from 1 to 5 in which 3 is not a factor at all, 1 is a critical negative factor and 5 is a critical positive factor in the decision to apply for NYSERDA funds.

1. A critical negative factor
2. Somewhat of a negative factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor

-98 Don't know

E1. BEFORE applying for Recovery Act funds from NYSERDA, had you ATTEMPTED to secure financing for this project?

1. Yes [GO TO E2]
2. No [GO TO AF5]

E2. [IF E1 = 1 (YES)] Had you SUCCESSFULLY SECURED at least some other financing for this project BEFORE applying for the NYSERDA funds?

1. Yes [GO TO E3]
2. No [GO TO AF5]

E3. [IF E2 = 1 (YES)] How did you use the previously secured funds? [ALLOW MULTIPLE RESPONSE]

1. Used them to pay for part of the costs of the energy efficiency project [GO TO AF5]
2. Declined the funds BEFORE receiving NYSERDA Recovery Act funds [ASK E5]
3. Declined the funds AFTER receiving NYSERDA Recovery Act funds [ASK E5]
4. Lost the funds [ASK E4]
5. Have not used previously secured funds yet [GO TO AF5]
6. Used the previously secured funds for another project [GO TO AF5]

-98 Don't know

E4. [IF E3 = 4 (LOST THE FUNDS)] Did Recovery Act funds from NYSERDA substitute for the funds that you LOST?

1. Yes, Recovery Act funds from NYSERDA substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

-97 Other [SPECIFY]

[IF ALSO RESPONDED Error! Reference source not found. = 2 OR 3 CONTINUE TO E5; OTHERWISE, SKIP TO E6]

E5. [IF E3 = 2 OR 3 (DECLINED THE FUNDS)] Did NYSERDA Recovery Act substitute for the funds that you DECLINED, or did something else happen?

1. Yes, NYSERDA Recovery Act funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

-97 Other [SPECIFY]

E6. [IF E3 = 2, 3 or 4 (DECLINE OR LOST FUNDS)] If the NYSERDA Recovery Act funds had not been available, what is the likelihood that you would have still completed this energy efficiency project? Please use a scale of 1 to 5 in which 1 is "not at all likely" and 5 is "very likely."

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

-98 Don't know

AF5. Did the NYSERDA Recovery Act award allow you to divert funds from the energy efficiency project to other projects in need of financing?

a. Yes [GO TO AF6]
b. No[GO TO FR1]

AF6. [IF YES TO AF5] Did any of these diverted funds finance the installation of additional renewable energy or energy efficiency projects?

a. Yes [GO TO NEXT QUESTION]
b. No [GO TO FR1]

AF7. [IF YES TO AF6] Please explain what type of renewable or energy efficiency projects you completed with the diverted funds, noting if the measure also received funds from another NYSERDA or utility program.

AF8. [IF YES TO AF6] If the NYSERDA Recovery Act funds had not been available, what is the likelihood that you would have diverted funds to other energy efficiency projects? Please use a scale of 1 to 5, where 1 = "not at all likely" and 5 = "very likely."

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

-98 Don't know

Free Ridership

FR1. Prior to participating in the NYSERDA Recovery Act program, were you planning to install similar energy efficiency measures?

A. Yes [CONTINUE FR2]
B. NO [GO TO FR3]

FR2. Below is a list of statements describing the planning process. Please indicate which statement best describes which point in the planning process this project was in before you participated in the NYSERDA Recovery Act program.

A. We had no formal plans for the project. We had some preliminary, internal discussions but no plans and no contact with a vendor, contractor or installer.
B. We had taken initial steps toward considering the high efficiency measures, such as requesting information from or generally discussing high efficiency options with a vendor, contractor, or installer
C. We had in-depth discussions of specific types of high efficiency equipment, including the positive and negative attributes and costs.
D. We had identified specific equipment manufacturers and models that we wanted to install, but had not yet begun the budgeting process.
E. We had identified specific equipment, manufacturers and models; however, budgets did not support the completion of the project.
F. We had identified specific equipment, manufacturers and models and incorporated the project into our budget.

FR3. Did your participation in the NYSERDA Recovery Act program influence EITHER the decision to implement the project or install the exact type, size, or amount of high efficiency measures included in the project? [TECHNICIAN – RESPOND YES IF ANY OF THIS IS TRUE. THE NEXT QUESTION CLARIFIES WHICH PART IS TRUE]

A. Yes, [GO TO FR4]
B. NO [GO TO FR5]

FR4. How did the NYSERDA Recovery Act program and funding influence your decision to implement this project? Below is a list of statements describing how the NYSERDA program and funding may have influenced your decision. Please indicate which statement best describes the influence of the NYSERDA program on your decision.

1. The NYSERDA program funding had no influence on the decision. All the measures would have been installed at the same efficiencies and in the same amounts without the program funding.
2. The NYSERDA program funding helped in making the final decision on the high efficiency measures that had already been thoroughly considered.
3. The NYSERDA program funding lent credibility to the decision to invest in high efficiency.
4. The NYSERDA program funding was a major driver in expanding the quantity, scope, or efficiency of the equipment.
5. The NYSERDA program funding was the primary reason that the high efficiency measures were installed.

FR5. On a scale of 1 to 5, in which 1 is not at all important and 5 very important, please indicate how important the NYSERDA ARRA program was in your decision to install high efficiency measures at this site.

1. Not at all important
2. Somewhat unimportant
3. Neither important or unimportant
4. Somewhat important
5. Very important

-98 Don't know

FR6. [**TECHNICIAN: If the measure is a large, individual technology in which efficiency level varies (e.g. HVAC), ask Question A about Efficiency of Measure. If the efficient measure is better thought about in terms of the number installed [e.g., lighting, computer monitors] ask Question B about Share of Measures. If not certain which to ask, Question A.**]

A. [EFFICIENCY OF MEASURE] What is the likelihood that you would have installed this exact same high efficiency equipment at this time if you had not received funding through the NYSERDA program? Please use a scale from 0% to 100%, where 0% means that you definitely would **NOT** have installed the same high efficiency equipment and 100% means you definitely **WOULD HAVE** installed the same equipment].

1. Definitely would NOT have incorporated measure of the same high level of efficiency (0%)
2. **May have** incorporated measure of the same high level of efficiency, even without the program. About what percent likelihood? _____%
3. Definitely **would** have incorporated measure of the same high level of efficiency anyway (100%)

B. [SHARE OF MEASURES] Next, please think about the scale of the energy efficiency measures you installed. What percentage of these high efficiency measures would you have incorporated if you had not received the NYSERDA Recovery Act funds?

1. Definitely would NOT have incorporated ANY of these measures (0%)
2. **May have** incorporated SOME of these measures, even without the program. About what percent of measures would have installed anyway? _____%
3. Definitely **would** have incorporated ALL of these measures even without the program (100%)

FR7. Please explain what the project would have been like without the NYSERDA ARRA funds?

Firmographics

F1. What is the principal business activity where the high efficiency measures were installed?

1. Education
2. Food Sales
3. Food Service
4. Health Care
5. Lodging
6. Retail/Mercantile
7. Office
8. Public Assembly
9. Public Order and Safety
10. Religious Worship
11. Service
12. Warehouse and Storage
13. Manufacturing (Identify Industry Type e.g., chemical, food, paper, etc.)
14. Vacant
15. OTHER (Specify: _____)

F2. Approximately, when was this building originally built?

1. Before 1960
2. 1961-1970
3. 1971-1980
4. 1981-1990
5. 1991-2000
6. 2001-2005
7. After 2005

F3. What is the approximate square footage of the building where the energy efficient measures were installed?

1. Less than 1,000 square feet
2. 1,000 to 4,999
3. 5,000 to 14,999
4. 15,000 to 24,999
5. 25,000 to 49,999
6. 50,000 to 99,999
7. 100,000 to 199,999
8. 200,000 to 499,999
9. 500,000 or more

F4. Approximately how many full-time equivalent workers are employed at this facility?

1. fewer than 5
2. 5 to 9
3. 10 to 19
4. 20 to 49
5. 50 to 99
6. 100 to 249
7. 250 or More

F5. [IF F1 = 1 (EDUCATION)] Approximately how many students attend this school?

1. fewer than 100
2. 100 to 249
3. 250 to 499
4. 500 to 749
5. 750 to 999
6. 1,000 or More

F6. [IF F1 = 4 (HEALTH CARE)] Approximately how many hospital beds are in this health care facility?

1. Zero
2. 1 to 5
3. 5 to 9
4. 10 to 19
5. 20 to 49
6. 50 to 99
7. 100 to 249
8. 250 or More

This concludes the survey. Thank you for taking the time to answer these important questions. A member of the evaluation staff may contact you in the future for a follow-up interview to clarify some of your responses to this survey.

NYSERDA ARRA Renewable Energy Programs, Online Participant Survey, RFP 10 and RFP 1613

7/18/11

[INTRO PAGE 1] Thank you for participating in this study of renewable energy programs administered by the New York State Energy Research and Development Authority (NYSERDA). Information collected during this survey will be used to help NYSERDA track, and improve, the effectiveness of its programs.

We are asking you to complete this survey because your municipality, university, school, hospital or not-for-profit organization has participated in at least one of NYSERDA's ARRA (the American Recovery and Reinvestment Act of 2009, also commonly referred to as the "Recovery Act" or "Stimulus" Funding) funded programs:

- Energy Efficiency Program for Municipalities, Schools, Hospitals, Public Colleges and Universities, and Non-Profits (RFP 1613), or
- Energy Efficiency and Conservation Block Grant, Implementation Funding for Small Municipalities (RFP 10)

NYSERDA is interested in your answers about why you participated in the NYSERDA ARRA program and how it influenced your renewable project. These questions will help us understand the overall impacts of the American Recovery and Reinvestment Act of 2009 .

Completing this survey:

[INTRO PAGE 2]

- Please carefully read all questions and directions
- Respond to all questions to the best of your ability
- The estimated length of the survey is 10 minutes. The survey may be completed in more than one session, if necessary. Your answers will be automatically saved if the survey is closed prior to completion. Upon reopening the survey with the original link provided, you will have the choice to resume from the last completed question or to start at the beginning and review your previous answers.

Your participation in this study supports renewable energy development in New York.

Thank you very much for your help!

NYSERDA has contracted with independent research firms, The Cadmus Group, Inc. and NMR Group, Inc., to conduct the study. The study team of The Cadmus Group, Inc. and NMR Group, Inc., as independent research firms, will keep the information private to the extent permitted by law. NYSERDA's analysis will only use summary level data and will not identify individual respondents or firms.

If you have any questions about the survey, please contact Greg Clendenning of NMR either by phone (617-284-6230, ext. 3) or by email (gclendenning@nmrgroupinc.com). If you have any concerns about the nature of this study and the reasons you are being asked to respond to it, please contact Rebecca Reed of NYSERDA either by phone (866-697-3732 ext. 3559) or by email (rlr@nyserda.org).

Our records indicate that Paige Holman at paige.holman@cadmusgroup.com is the primary contact for this project and is most knowledgeable about the decision making process to install the equipment.

If the contact information is correct, please check this box:

☐ Contact Information Is Correct

If you are not the person listed above, but are best qualified to answer these questions, please fill in your name and email address below so that we may update our records.

Name:

Email:

Programming Note: Section headings are NOT to be included in the online survey.

Introduction

First we would like to ask you a few questions about your renewable energy project and how you found out about the NYSERDA program.

I1. According to our records, your _____ has received funding from NYSERDA to install a renewable energy project. Can you confirm this is correct?
1. Yes [CONTINUE]
2. No [Please fill in correction]

I1a [If I1=2] Our records indicate that your organization has received funding from NYSERDA at this time. Currently those are all the questions we have, but a representative may contact you in the future to resolve the misunderstanding. Thank you for your time. [SCREEN OUT]

I2. Our records also show that the funding provided was to install a _____ system, is this correct?
1. Yes [CONTINUE]
2. No [Please fill in correction]

Awareness

A1. How did you hear about the program opportunity? **Please mark all that apply.**
1. Through NYSERDA's FlexTech program
2. Through participation in another NYSERDA program [PLEASE SPECIFY]
3. Renewable energy contractor / installer
4. Program marketing materials
5. Program outreach sessions
6. Email or mailing from NYSERDA
7. Webinar
8. NYSERDA website
9. Story in the media
10. Colleague, friend, family -- word of mouth

-97 Other [PLEASE SPECIFY]

Motivation

M1. Thinking about the equipment you installed with the assistance of NYSERDA funding, what was the most important reason for installing the system? **Please select just one response.**

1. Reduce energy bills / energy savings
2. Reduce our carbon footprint and emissions
3. Green marketing / public relations
4. Regulatory requirement or mandate
5. Hedge against future increases in energy prices
6. Concern for the environment
7. Increase energy independence
8. Promote renewable energy; help increase the adoption of renewable energy

-97 Other [SPECIFY]

M2. Why did you apply for funds from NYSERDA for the equipment? Please focus your answer on why you applied for the **funds**, not why you decided to install a renewable technology.

1. Could not find funding from other sources
2. Contractor suggested I apply
3. Other funding sources required me to match or leverage funds
4. Thought chances of getting funded were good
5. Looking to accelerate project
6. Could not afford to do the work without funding

-97 Other [PLEASE SPECIFY]

M3. Are you aware that the funding your [school] received from NYSERDA for the equipment was provided by the Federal Government through the American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Recovery Act" or "Stimulus" Funding?

1. Yes [GO TO M4]
2. No [GO TO M6]

M4. [IF YES TO M3] When did you become aware that the funds were provided by the Recovery Act?

1. When we learned about the NYSERDA program
2. During the application review process
3. When NYSERDA awarded us the funds
4. When NYSERDA began asking for information to fulfill the federal reporting requirements

-97 Other [PLEASE SPECIFY]

M5. [IF YES TO M3] To what extent was your decision to apply for funds from NYSERDA affected by the fact that the funds were provided by the Recovery Act? Was it….

1. A critical negative factor (a drawback from participation)
2. Somewhat of a negative factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (a driver towards participation)

M6.To what extent was your decision to apply for funds from NYSERDA affected by **when** the funds became available? Was it...

1. A critical negative factor (a drawback from participation)
2. Somewhat of a negative factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (a driver towards participation)

M7. Prior to participating in this NYSERDA program, had you participated in any other NYSERDA energy efficiency, energy conservation, or renewable energy program?

1. Yes [GO TO NEXT QUESTION]
2. No [GO TO AF1]

M8. [IF YES TO M7] In what type of NYSERDA programs have you participated? **Please mark all that apply**.

1. Energy audit [PLEASE SPECIFY THE NYSERDA PROGRAM]
2. Technical study [PLEASE SPECIFY THE NYSERDA PROGRAM]
3. New construction [PLEASE SPECIFY THE NYSERDA PROGRAM]
4. Equipment replacement incentive [PLEASE SPECIFY THE NYSERDA PROGRAM]
5. Renewable energy [PLEASE SPECIFY THE NYSERDA PROGRAM]

-97 Other [PLEASE SPECIFY]

M9.[IF YES TO M7] How influential was your participation in other NYSERDA programs in your decision to apply to this program? Was it…

1. A critical negative influence (a drawback from participation)
2. Somewhat of a negative influence
3. Not at all an influence
4. Somewhat of a positive influence
5. A critical positive influence (a driver towards participation)

M10. [IF YES TO M7] Was the equipment you installed with the NYSERDA ARRA funds recommended in any energy audit or conservation study you had previously completed through a NYSERDA or Utility Program?

1. Yes [PLEASE SPECIFY THE NYSERDA OR UTILITY PROGRAM]
2. No

Alternative and Additional Funding & Economy

Next we have some questions about the funding sources for your renewable energy project.

AF1. Did the NYSERDA ARRA funds cover the **entire** cost of your system?

1. Yes [GO TO E1]
2. No

AF2. Approximately what percentage of the total project budget did the NYSERDA ARRA funds provide?

_____ %

AF3. What other funding sources did you use to complete the project? **Please mark all that apply.**

1. Grants [PLEASE SPECIFY GRANT ORGANZATION OR AGENCY]
2. Tax credits
3. Rebates on the equipment
4. Loans
5. Operating budget
6. Capital improvement budget

-97 Other [PLEASE SPECIFY]

AF4. Did any of the other financing you received for this project require that you obtain matching funds from other sources?

1. Yes
2. No [GO TO E1]

AF5. [IF YES TO AF4] To what extent was your decision to apply for funds from NYSERDA affected by the requirement from other sources to obtain matching funds for the project? Was it….

1. A critical negative factor (a drawback from participation)
2. Somewhat of a negative factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (a driver towards participation)

E1. **Before** applying for the NYSERDA funds, had you **attempted** to secure financing for this project?

1. Yes [GO TO NEXT QUESTION]
2. No [GO TO AF8]

E2. [IF E1= 1 (YES)] Had you **successfully secured** at least some other financing for this project **before** applying for the NYSERDA funds?

1. Yes [GO TO NEXT QUESTION]
2. No [GO TO AF8]

E3. [IF E2= 1 (YES)] How did you use the previously secured funds?

1. Used them to pay for part of the costs of the renewable project [GO TO AF9]
2. Declined the funds BEFORE receiving NYSERDA Recovery Act funds [ASK E6 AND E7]
3. Declined the funds AFTER receiving NYSERDA Recovery Act funds [ASK E6 AND E7]
4. Lost the funds [ASK E4 AND E5]
5. Have not used previously secured funds yet [GO TO AF9]
6. Other [PLEASE SPECIFY]

E4. [IF E3= 4 (LOST THE FUNDS)] Why did you LOSE the funds?

1. Tightening of the credit market
2. Funding source said they were no longer available
3. Could not meet requirements set forth by the funding source

-97 Other [SPECIFY]

E5. [IF **Error! Reference source not found.**= 4 (LOST THE FUNDS)] Did NYSERDA Recovery Act substitute for the funds that you **lost** , or did something else happen?

1. Yes, NYSERDA Recovery Act funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

-97 Other [SPECIFY]

[IF ALSO RESPONDED Error! Reference source not found.= 2 OR 3 CONTINUE TO E6; OTHERWISE, SKIP TO E8]

E6. [IF E3= 2 OR 3 (DECLINED THE FUNDS)] Why did you DECLINE the funds?

1. Could not meet requirements set forth by the funding source
2. Requirements set forth by funding sources were burdensome

-97 Other [SPECIFY]

E7. [IF E3= 2 OR 3 (DECLINED THE FUNDS)] Did NYSERDA Recovery Act substitute for the funds that you **declined** , or did something else happen?

1. Yes, NYSERDA Recovery Act funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

-97 Other [SPECIFY]

E8. [IF E3= 2 or 3 or 4 (DECLINE OR LOST FUNDS)] If the NYSERDA funds had not been available, what is the likelihood that you would have still completed this energy efficiency project?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

AF6. [IF E2= 1 (YES), OTHERWISE, SKIP TO AF8] Had you secured other financing for the project that you subsequently turned down after receiving the NYSERDA Funds?

1. Yes [GO TO NEXT QUESTION]
2. No [GO TO AF8]

AF7. What type of financing did you turn down? **Please mark all that apply.**

1. Loan
2. Grant
3. Funding from another NYSERDA program [PLEASE SPECIFY]
4. Funding from a utility program [PLEASE SPECIFY]

-97 Other [PLEASE SPECIFY]

AF8. If the NYSERDA funds had not been available, what is the likelihood that you would have installed the same system?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

AF9. Did the NYSERDA award allow you to divert funds that had been budgeted for this project to go to other projects in need of financing?

1. Yes [GO TO NEXT QUESTION]
2. No [GO TO FR1]

AF10. [IF YES TO AF9] If the NYSERDA funds had not been available, what is the likelihood that you would have diverted internal funds to other projects?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

AF11. [IF YES TO AF9] Did any of these diverted funds finance the installation of additional renewable energy or energy efficiency projects?

1. Yes [GO TO NEXT QUESTION]
2. No [GO TO AF15]

AF12. [IF YES TO AF11] Please explain what type of renewable or energy efficiency projects you completed with the funds. If applicable, please also indicate if the measures received funds from another NYSERDA program, or other utility program [Please mark all that apply]

		Received other NYSERDA Funds	Received other Utility Funds
1.	Solar photovoltaic (PV)		
2.	Solar hot water		
3.	Solar thermal		
4.	Biomass boiler		
5.	Wind turbine		
6.	Energy efficient lighting		
7.	Energy efficient heating system		
8.	Energy efficient cooling system		
9.	Energy efficient hot water system		
10.	Insulation		
11.	Weatherization/Envelope		
-97.	Other [PLEASE SPECIFY]		

AF 15. [IF NO TO AF11] How did you use the diverted funds?

1. Other capital improvement projects [SPECIFY]
2. Staff retention
3. New staff hires

-97. Other [PLEASE SPECIFY]

AF 16. [IF 2 to AF15] How many staff members were you able to retain?

AF 17. [IF 3 to AF15] How many staff members were you able to hire?

Free Ridership

FR1. Prior to participating in this NYSERDA program, were you planning to install a similar system?

1. Yes [CONTINUE FR2]
2. NO [GO TO FR3]

FR2. Below is a list of statements describing the planning process. Please indicate which statement best describes the point in the planning process this project was in before you participated in the NYSERDA program.

1. We had no formal plans for the project. We had some preliminary, internal discussions but no plans and no contact with a vendor, contractor or installer.
2. We had taken initial steps toward considering the renewable equipment, such as requesting information from or generally discussing options with a vendor, contractor, or installer.
3. We had in-depth discussions of specific types of renewable equipment, including the positive and negative attributes and costs.
4. We had identified specific equipment manufacturers and models that we wanted to install, but had not yet begun the budgeting process.
5. We had identified specific equipment, manufacturers and models; however, budgets did not support the completion of the project.
6. We had identified specific equipment, manufacturers and models and incorporated the project into our budget.

FR3. How did the NYSERDA program and funding influence your decision to install your renewable system? Below is a list of statements describing how the NYSERDA program and funding may have influenced your decision. Please indicate which statement best describes the influence of the NYSERDA program on your decision.

1. The NYSERDA program funding had no influence on the decision. The same type of system and the same capacity system would have been installed even without the program funding.
2. The NYSERDA program funding helped in making the final decision on the system that had already been thoroughly considered.
3. The NYSERDA program and funding helped in choosing to install a system that had been discussed but not thoroughly considered.
4. The NYSERDA program funding was a major driver in the decision to install the system.
5. The NYSERDA program funding was the primary reason that the system was installed.

FR4. Please indicate how important the NYSERDA program was in your decision to install your system.

1. Not at all important
2. Somewhat unimportant
3. Neither important or unimportant
4. Somewhat important
5. Very important

FR5. What is the likelihood that you would have installed the same efficiency or size renewable energy system ***at this time*** if you had not received funding through the NYSERDA program? Please use a scale from 0% to 100%, where 0% means that you definitely would **NOT** have installed a renewable energy system and 100% means you definitely **WOULD HAVE** installed the same renewable energy system].

_____%

FR6. Next, please think about the capacity of your renewable energy system. If the NYSERDA Program funds had not been available, what capacity system would you have installed? Please estimate a lower bound, an upper bound and your best estimate of the capacity of the system you would have installed. If you would not have installed a system without the NYSERDA funds, please enter "0" in each box below.

Lower Bound: ____ kW or Btu
Upper Bound: ____ kW or Btu)
Best Estimate: ____ (kW or Btu)

Takeback

Next we have some questions about your energy usage and other actions you may have taken since installing the renewable energy technology.

T1. Has your energy usage increased, decreased, or remained the same since installing the renewable technology?

1. Energy usage has **increased**
2. Energy usage has **decreased**
3. Energy usage has **stayed the same**

T2. [If T1 = 1 or 3] Which of the following actions has your building experienced **since** the installation of your renewable equipment? Please check all that apply.

1. Increased your temperature settings during the winter
2. Decreased your temperature settings during the summer
3. Increased your plug load (the number of electrical devices plugged in)
4. Leaving lights on more frequently
5. Not shutting off office equipment
6. Increased hot water use
7. Installed any additional large piece of equipment
8. Other:

Firmographics

F1. Approximately when was this building originally built?

1. Before 1960
2. 1961-1970
3. 1971-1980
4. 1981-1990
5. 1991-2000
6. 2001-2005
7. After 2005

F2. What is the approximate square footage of the building where the equipment was installed?

1. Less than 1,000 square feet
2. 1,000 to 4,999
3. 5,000 to 14,999
4. 15,000 to 24,999
5. 25,000 to 49,999
6. 50,000 to 99,999
7. 100,000 to 199,999
8. 200,000 to 499,999
9. 500,000 or more

F3. Approximately how many full-time equivalent workers are employed at this facility?

1. fewer than 5
2. 5 to 9
3. 10 to 19
4. 20 to 49
5. 50 to 99
6. 100 to 249
7. 250 or More

F4. [IF EDUCATION FROM SAMPLE READ-IN] Approximately how many students attend this school?

1. fewer than 100
2. 100 to 249
3. 250 to 499
4. 500 to 749
5. 750 to 999
6. 1,000 or More

F5. [IF HEALTH CARE FROM SAMPLE READ-IN] Approximately how many hospital beds are in this health care facility?

1. Zero
2. 1 to 5
3. 5 to 9
4. 10 to 19
5. 20 to 49
6. 50 to 99
7. 100 to 249
8. 250 or More

This concludes the survey. Thank you for taking the time to answer these important questions. Your survey is not complete until you have selected the 'SUBMIT' button below. A member of the evaluation staff may contact you in the future for a follow-up interview to clarify some of your responses to this survey.

Table 1: Plan for Analysis

Question	Workplan Topic	Workplan link
I1, I2	Background, verify correct contact and system data	
A1	Marketing and Motivation	How did you first hear about the program
M1, M2	Marketing and Motivation	Why did you apply for funding through NYSERDA
M3, M4, M5	Marketing and Motivation	Was your decision impacted by having the ultimate source of budget as ARRA funds
M6	Marketing and Motivation	Was your decision impacted by the timing of when the funds were available
M7, M8, M9, M10	Marketing and Motivation	Did your prior participation in an energy audit or conservation study programs (such as ARRA Pon4 or Flex Tech) influence your decision to participate in this program? Is so, which audit program(s) did you previously participate in?
AF1	Alternative and Additional Funding	Did you fund this project solely with NYSERDA ARRA funds or did you leverage other funds
AF3	Alternative and Additional Funding	If so, what were the other sources of funding used
AF2	Alternative and Additional Funding	What percent of the project did ARRA fund
AF6, AF7, AF9	Alternative and Additional Funding	Did you use funds originally meant for this project for another project, decline them, or did something else happen
AF4	Alternative and Additional Funding	Did other funding for the project require that you leverage resources
AF5	Alternative and Additional Funding	Did such requirements influence your decision to apply for NYSERDA ARRA funds
E1, E2	Economy	Did you have funding secured for the project before applying for NYSERDA ARRA funds?
E3	Economy	Did any of the project's funding fall through because of tightening credit or other economic conditions resulting from the recession?
FR1, FR2, FR3, FR4, FR5, FR6, E3, AF6, AF8, AF9, AF10, AF2	Free Ridership	To the best of your knowledge, would your project have been completed without NYSERDA ARRA funds? Would it have occurred on the same timeline? Why or why not? Would the generating capacity of your project have been the same as what you installed under NYSERDA ARRA? Why or why not? Did NYSERDA ARRA-funding allow you—or require you—to change your plans in any way? If so, how?
AF11, AF12, 0	Spillover	What other actions, if any, have you taken to save energy or generate more capacity as a result of your participation in the

Question	Workplan Topic	Workplan link
		NYSERDA ARRA-funded program?
0	Economy	
T1, T2	Takeback	Has your energy usage increased, decreased, or remained the same since installing the renewable technology? If it has changed, how was that change related to the installation of the measure(s)?
F1, F2, F3, F4, F5, F6	Firmographics	

NYSERDA ARRA Renewable Energy Programs, Telephone Survey, PON 1686 End Users (Business)

FINAL

Hello, my name is _____ and I am calling from _____on behalf of the New York State Energy Research and Development Authority (NYSERDA). I would like to ask you some questions regarding the solar electric system your company recently installed. This is technically called a solar photovoltaic [PHOTO vole tay ik], or solar PV system.

Your answers are important to us. Your experience, together with the experiences of other businesses like yours will help NYSERDA improve future programs. This is not a sales or marketing call.

Your responses will be kept private to the extent permitted by law. NYSERDA's analysis will only use summary level data and will not identify individual organizations.

The survey should take about 15 minutes. Is this a good time to talk? [If not, ask when is a good time to reschedule.]

Do you have any questions?

[IF NECESSARY, OFFER THE CONTACT NAME FROM BELOW AS THE PERSON TO CONTACT WITH ANY QUESTIONS ABOUT THE VALIDITY OF THE RESEARCH.]

Rebecca Reed	NYSERDA	866-697-3732 x3559

S1. First, are you the person who is most knowledgeable about the solar electric system that was recently installed at [INSERT ADDRESS & NAME OF BUSINESS & TYPE OF BUSINESS]?

1. Yes
2. No [ASK TO SPEAK WITH PERSON MOST KNOWLEDGEABLE ABOUT THE SOLAR ELECTRIC SYSTEM, REPEAT INTRODUCTION AND ASK **Error! Reference source not found.**]

A1. Do you know if any of the cost of your solar electric system was funded by the federal American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Recovery Act" or "Stimulus" Funding?

1. Yes
2. No

-98 Don't know

-99 Refused

A2. Before today's call, had you ever heard of NYSERDA?

1. Yes
2. No

-98 Don't know

-99 Refused

A3. Are you aware of any programs that promote installation of solar electric systems?

1. Yes
2. No (Skip to A5)

-98 Don't know

-99 Refused

A4. **[IF A3= 1 (YES)]** Did you receive an incentive or rebate from a SOLAR ELECTRIC program to help install this solar electric system?

1 Yes

2 No

-98 Don't know

-99 Refused

A5. [Ask if A2 = Yes] Before today's call, did you know that NYSERDA helped in reducing the cost of the SOLAR ELECTRIC system you recently had installed?

1. Yes
2. No

-98 Don't know

-99 Refused

A6. Did you use any tax credits or financing to help pay for your solar electric system?

1 Yes
2 No
-98 Don't know
-99 Refused

A7. [IF A6 = YES] What tax credits or financing did you use? **[ALLOW MULTIPLE RESPONSES]**

1. Federal tax credit **[IF A7 = Yes ASK M1]**
2. State tax credit **[IF A7 = Yes ASK M2]**
3. Loans

-97 Other [PLEASE SPECIFY]

-98 Don't know

-99 Refused

M1. To what extent was your decision to install your solar electric system affected by the availability of federal tax credits for PV systems? Was it extremely important, somewhat important, not very important or not important at all in your decision?

1 Extremely important
2 Somewhat important
3 Neither important nor unimportant. **[DO NOT READ THIS CHOICE].**
4 Not very important
5 Not important at all
-97 (Other) [PLEASE SPECIFY]
-98 Don't know
-99 Refused

M2. To what extent was your decision to install your SOLAR ELECTRIC system affected by the availability of state tax credits for SOLAR ELECTRIC systems? Was it extremely important, somewhat important, not very important or not important at all in your decision?

1 Extremely important
2 Somewhat important
3 Neither important nor unimportant. **[DO NOT READ THIS CHOICE].**
4 Not very important
5 Not important at all
-97 (Other) [PLEASE SPECIFY]
-98 Don't know
-99 Refused

Now I'd like to ask you some questions about why your company decided to install the SOLAR ELECTRIC system.

M3. According to our records, you installed a SOLAR ELECTRIC system with a capacity of __kilowatts, for which you paid $___ per kilowatt for your SOLAR ELECTRIC system and a total of $___ for the entire system. Does this sound about right? [INSERT CAPACITY AND PRICE FROM PROGRAM DATA]

1. Yes [SKIP TO M5]
2. No

-98 Don't know

-99 Refused

M4. [IF NO TO **Error! Reference source not found.**] What was the capacity and what was the cost of your SOLAR ELECTRIC system? [CALCULATE PRICE PER KW FROM RESPONSE]

$_____ [RECORD OVERALL PRICE]

_____kW [RECORD CAPACITY OF THE SYSTEM]

M5. Thinking about your SOLAR ELECTRIC system, what would you say was the most important reason for installing the system?

[DO NOT READ CHOICES]

1. Reduce energy bills / energy savings
2. Reduce our carbon footprint and emissions
3. Hedge against future increases in energy prices
4. Green marketing / public relations
5. Regulatory requirements or mandate
6. Concern for the environment
7. Increase energy independence
8. Promote renewable energy; help increase the adoption of renewable energy

-97 Another reason [SPECIFY]

-98 Don't know

-99 Refused

M6. How did you first learn about the opportunity to install a solar electric system for your business?

[DO NOT READ CHOICES]

1 Word of mouth from friend, family or neighbor / business colleague
2 Brochure or catalogue from a SOLAR ELECTRIC dealer or installer
3 Direct contact by a SOLAR ELECTRIC installer
4 TV, radio, newspaper story
5 NYSERDA program staff
6 NYSERDA website
-97 (Other) [SPECIFY]
-98 Don't know
-99 Refused

M7. How did you find the SOLAR ELECTRIC installer who installed your SOLAR ELECTRIC system?

[DO NOT READ]

1 Word of mouth from friend, family or business colleague
2 Brochure or catalogue from a SOLAR ELECTRIC dealer or installer
3 Direct contact by a SOLAR ELECTRIC installer
4 Referral from other SOLAR ELECTRIC system owner
5 NYSERDA website
6 Phone book / internet / Web search
7 SOLAR ELECTRIC installer's Web site
-97 (Other) [SPECIFY]
-98 Don't know
-99 Refused

M8. Do you have anything you'd like to share about the decision process that resulted in the particular type or size of SOLAR ELECTRIC system you installed? [OPEN END]

Willingness to Pay

Next we have a few more questions about the price you paid for your SOLAR ELECTRIC system. As a reminder, you paid $XXX per kilowatt for your SOLAR ELECTRIC system and a total of $___ for the entire system [INSERT VALUES FROM PROGRAM RECORDS OR FROM M3]

WTP1. Since you were 100% willing to purchase this solar electric system at this price, how willing would you have been to purchase system if the price had been:

[READ EACH CHOICE AND WAIT FOR CUSTOMER RESPONSE IN % (less than 100%)]

A. $400 per kW more or [sum of $XXX + $400] per KW

_____% willing

B. $800 per kW more or [sum of $XXX + $800] per KW

_____% willing

C. $1200 per kW more or [sum of $XXX +$ 1200] per KW

_____% willing

Takeback

Next we have questions about some actions your company may have taken since installing the SOLAR ELECTRIC system.

T1. Since the installation of your SOLAR ELECTRIC equipment have you . . .

1. Increased your thermostat settings during the winter?
2. Decreased your thermostat settings during the summer?
3. Increased your use of electricity for electrical devices plugged in?
4. Installed more equipment that will use electricity?
5. Left lights on more frequently
6. Left office equipment on overnight
7. Increased hot water use
8. Installed any additional large piece of electrical equipment

T2. [If yes to any in T1] Can you briefly explain why you have made these changes? [OPEN END]

Renewable and EE Spillover

S1. Since installing your SOLAR ELECTRIC system, have you taken any other actions to generate more electricity from a renewable energy source?

1. Yes
2. No

-98 Don't know

-99 Refused

S2. [IF **Error! Reference source not found.** = 1 (YES)] What actions have you taken to accomplish this? [PLEASE SPECIFY]

S3. [IF **Error! Reference source not found.** = 1 (YES)] How much additional electric capacity from renewable energy generation have you added?

_____ [kW of additional capacity]

S4. Since installing your solar PV system, have you installed any energy efficient or ENERGY STAR equipment?

1. Yes – GO TO S5
2. No – GO TO S6

-98 Don't know

-99 Refused

S5. What energy efficient or ENERGY STAR rated equipment are these? [Ask all follow up questions for each and every piece of equipment claimed.]

Equipment / Improvement S5a. Yes or No	S5b - If mentioned, Did you receive a rebate or tax credit from another entity for any of the additional equipment installed?	S5c - If yes, which rebate or tax credit program was it?	S5d – From 0 to 10, where 10 is most influential, how would you rate the influence of your PV installation on this purchase?
1. Air conditioner			
2. Clothes washer			
3. Dishwasher			
4. Duct sealing			
5. Gas Furnace			
6. Heat Pump			
7. Insulation			
8. Lighting			
9. Pool equipment			
10. Programmable Thermostat			
11. Refrigerator/freezer			
12. Dryer			
13. Television			
14. Water heater			
15. Whole house fan			
16. Windows/doors			
17. Other Specify 1			
18. Other Specify 2			
19. Other Specify 3			
20. Other Specify 4			

S6. Since installing your solar PV system, have you taken any energy saving behaviors?

1. Yes – GO TO S7
2. No – GO TO D1

-98 Don't know

-99 Refused

S7. What behaviors are these? [DO NOT READ]

Action	S7a. Yes or No	S7b– From 0 to 10, where 10 is most influential, how would you rate the influence of your PV installation on this behavioral change?
Increase thermostat settings in the summer		
Decrease thermostat settings in winter		
Decrease temperature setting on water heater		
Decreased hot water use		
Turn the lights off more		
Decreased the number of electrical equipment plugged in		
Turn off office equipment when not in use		
Installed motion sensors for lighting		
Other		
Other		

FIRMOGRAPHICS

Finally, I just have a few concluding questions about the facility where the solar electric system is installed.

F1. What is the approximate square footage of the building where the equipment was installed?

1. Less than 1,000 square feet
2. 1,000 to 4,999
3. 5,000 to 14,999
4. 15,000 to 24,999
5. 25,000 to 49,999
6. 50,000 to 99,999

7. 100,000 to 99,999
8. 200,000 to 499,999
9. 500,000 or more

-98 Don't know

-99 Refused

F2. Approximately, when was this building built?

1. Before 1960
2. 1961-1970
3. 1971-1980
4. 1981-1990
5. 1991-2000
6. 2001-2005
7. After 2005

-98 Don't know

-99 Refused

F3. Approximately how many full-time equivalent workers are employed at this facility?

1. fewer than 5
2. 5 to 9
3. 10 to 19
4. 20 to 49
5. 50 to 99
6. 100 to 249
7. 250 or More

-98 Don't know

-99 Refused

F4. [IF EDUCATION FROM SAMPLE READ-IN] Approximately how many students attend this school?

1. fewer than 100
2. 100 to 249
3. 250 to 499
4. 500 to 749
5. 750 to 999
6. 1,000 or More

F5. [IF HEALTH CARE FROM SAMPLE READ-IN] Approximately how many hospital beds are in this health care facility?

1. Zero
2. 1 to 5
3. 5 to 9
4. 10 to 19
5. 20 to 49
6. 50 to 99
7. 100 to 249
8. 250 or More

This concludes the survey. Thank you for taking the time to answer these important questions.

SURVEYS:

NYSERDA ARRA Renewable Energy Programs, Telephone Survey, PON 1686 End Users (Residential)

FINAL

Hello, my name is _____ and I am calling from _____on behalf of the New York State Energy Research and Development Authority (NYSERDA). I would like to ask you some questions regarding the solar electric system you recently installed. This is technically called a solar photovoltaic [PHOTO vole tay ik], or solar PV system.

Your answers are important to us. Your experience, together with the experiences of other homeowners like you will help NYSERDA improve future programs. This is not a sales or marketing call.

Your responses will be kept private to the extent permitted by law. NYSERDA's analysis will only use summary level data and will not identify individuals.

The survey should take about 15 minutes. Is this a good time to talk? [If not, ask when is a good time to reschedule.]

Do you have any questions?

[IF NECESSARY, OFFER THE CONTACT NAME FROM BELOW AS THE PERSON TO CONTACT WITH ANY QUESTIONS ABOUT THE VALIDITY OF THE RESEARCH.]

Rebecca Reed	NYSERDA	866-697-3732 x3559

S1. First, are you the person who is most knowledgeable about the solar electric system that was recently installed at [INSERT ADDRESS]?
1. Yes
2. No [ASK TO SPEAK WITH PERSON MOST KNOWLEDGEABLE ABOUT THE SOLAR ELECTRIC SYSTEM, REPEAT INTRODUCTION AND ASK S1]

Awareness

A1. Do you know if any of the cost of your solar electric system was funded by the federal American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Recovery Act" or "Stimulus" Funding?
1. Yes
2. No

-98 Don't know

-99 Refused

A2. Before today's call, had you ever heard of NYSERDA?
1. Yes
2. No

-98 Don't know

-99 Refused

A3. Are you aware of any programs that promote installation of solar electric systems?

1. Yes
2. No [Skip to Q A5]

-98 Don't know

-99 Refused

A4. **[IF A3= 1 (YES)]** Did you receive an incentive or rebate from a solar electric program to help install this solar electric system?

1 Yes

2 No

-98 Don't know

-99 Refused

A5. [Ask if A2 = Yes] Before today's call, did you know that NYSERDA helped in reducing the cost of the SOLAR ELECTRIC system you recently had installed?

1. Yes
2. No

-98 Don't know

-99 Refused

A6. Did you use any tax credits or financing to help pay for your solar electric system?

1 Yes
2 No
-98 Don't know
-99 Refused

A7. **[IF A6 = YES]** What tax credits or financing did you use? **[ALLOW MULTIPLE RESPONSES]**

1. Federal tax credit [**IF A7 = Yes ASK M1]**
2. State tax credits **[IF A7 = Yes ASK M2]**
3. Loans

-97 Other [PLEASE SPECIFY]

-98 Don't know

-99 Refused

M1. To what extent was your decision to install your SOLAR ELECTRIC system affected by the availability of federal tax credits for PV systems? Was it extremely important, somewhat important, not very important or not important at all in your decision?

1 Extremely important
2 Somewhat important
3 Neither important nor unimportant. **[DO NOT READ THIS CHOICE].**
4 Not very important
5 Not important at all
-97 (Other) [SPECIFY]
-98 Don't know
-99 Refused

M2. To what extent was your decision to install your SOLAR ELECTRIC system affected by the availability of state tax credits for SOLAR ELECTRIC systems? Was it extremely important, somewhat important, not very important or not important at all in your decision?

1 Extremely important
2 Somewhat important
3 Neither important nor unimportant. **[DO NOT READ THIS CHOICE].**
4 Not very important
5 Not important at all
-97 (Other) [SPECIFY]
-98 Don't know
-99 Refused

Now I'd like to ask you some questions about why you decided to install the SOLAR ELECTRIC system.

M3. According to our records, you installed a SOLAR ELECTRIC system with a capacity of __kilowatts, for which you paid $___ per kilowatt for your SOLAR ELECTRIC system and a total of $___ for the entire system. Does this sound about right? [INSERT CAPACITY AND PRICE FROM PROGRAM DATA]

1. Yes [SKIP TO M5]
2. No

-98 Don't know

-99 Refused

M4. [IF NO TO M3] What was the capacity and what was the cost of your SOLAR ELECTRIC system? [CALCULATE PRICE PER KW FROM RESPONSE]

$_____ [RECORD OVERALL PRICE]

_____kW [RECORD CAPACITY OF THE SYSTEM]

M5. Thinking about your SOLAR ELECTRIC system, what would you say was the most important reason for installing the system?

[DO NOT READ CHOICES]

1. Reduce energy bills / energy savings
2. Reduce our carbon footprint and emissions
3. Hedge against future increases in energy prices
4. Concern for the environment
5. Increase energy independence
6. Promote renewable energy; help increase the adoption of renewable energy

-97 Another reason [SPECIFY]

-98 Don't know

-99 Refused

M6.How did you first learn about the opportunity to install a solar electric system for your home?

[DO NOT READ CHOICES]

1 Word of mouth from friend, family or neighbor / business colleague
2 Brochure or catalogue from a SOLAR ELECTRIC dealer or installer
3 Direct contact by a SOLAR ELECTRIC installer
4 TV, radio, newspaper story
5 NYSERDA program staff
6 NYSERDA website
-97 (Other) [SPECIFY]
-98 Don't know
-99 Refused

M7. How did you find the SOLAR ELECTRIC installer who installed your solar SOLAR ELECTRIC system?

[DO NOT READ CHOICES]

1 Word of mouth from friend, family or business colleague
2 Brochure or catalogue from a SOLAR ELECTRIC dealer or installer
3 Direct contact by a SOLAR ELECTRIC installer
4 Referral from other SOLAR ELECTRIC system owner
5 NYSERDA website
6 Phone book / internet / Web search
7 SOLAR ELECTRIC installer's Web site
-97 (Other) [SPECIFY]
-98 Don't know
-99 Refused

M8. Do you have anything you'd like to share about the decision process that resulted in the particular type or size of solar SOLAR ELECTRIC system you installed? [OPEN END]

Willingness to Pay

Next we have a few more questions about the price you paid for your solar SOLAR ELECTRIC system. As a reminder, you paid $XXX per kilowatt for your SOLAR ELECTRIC system and a total of $___ for the entire system [INSERT VALUES FROM PROGRAM RECORDS OR FROM M3]

WTP1. Since you were 100% willing to purchase this solar electric system at this price, how willing would you have been to purchase the system if the price had been:

[READ EACH CHOICE AND WAIT FOR CUSTOMER RESPONSE IN % (less than 100%)]

A. $400 per kW more or [sum of $XXX + $400] per kW, for a total system cost of $____. This is an additional $___ than what you paid.

   _____% willing

B. $800 per kW more or [sum of $XXX + $800] per kW

   _____% willing

C. $1200 per kW more or [sum of $XXX +$ 1200] per kW

   _____% willing

Takeback

Next we have questions about some actions you may have taken since installing the SOLAR ELECTRIC system.

T1. Since the installation of your SOLAR ELECTRIC equipment have you . . .

1. Increased your thermostat settings during the winter?
2. Decreased your thermostat settings during the summer?
3. Increased your use of electricity for electrical devices plugged in?
4. Left lights on more frequently?
5. Increased hot water use?
6. Installed any additional large piece of electrical equipment?

T2. [If yes to any in T1] Can you briefly explain why you have made these changes? [OPEN END]

Renewable and EE Spillover

S1. Since installing your SOLAR ELECTRIC system, have you taken any other actions to generate more electricity from a renewable energy source?

1. Yes
2. No

-98 Don't know

-99 Refused

S2. [IF S1 = 1 (YES)] What actions have you taken to accomplish this? [PLEASE SPECIFY]

S3. [IF S1 = 1 (YES)] How much additional electric capacity from renewable energy generation have you added?

_____ [kW of additional capacity]

S4. Since installing your solar PV system, have you installed any energy efficient or ENERGY STAR equipment?

1. Yes – GO TO S5
2. No – GO TO S6

-98 Don't know

-99 Refused

S5. What energy efficient or ENERGY STAR rated equipment are these? [Ask all follow up questions for each and every piece of equipment claimed.]

Equipment / Improvement S5a. Yes or No	S5b - If mentioned, Did you receive a rebate or tax credit from another entity for any of the additional equipment installed?	S5c - If yes, which rebate or tax credit program was it?	S5d – From 0 to 10, where 10 is most influential, how would you rate the influence of your PV installation on this purchase?
1. Air conditioner			
2. Clothes washer			
3. Dishwasher			
4. Duct sealing			
5. Gas Furnace			
6. Heat Pump			
7. Insulation			
8. Lighting			
9. Pool equipment			
10. Programmable Thermostat			
11. Refrigerator/freezer			
12. Dryer			
13. Television			
14. Water heater			
15. Whole house fan			
16. Windows/doors			
17. Other Specify 1			
18. Other Specify 2			
19. Other Specify 3			
20. Other Specify 4			

S6. Since installing your solar PV system, have you taken any energy saving behaviors?

1. Yes – GO TO S7
2. No – GO TO D1

-98 Don't know

-99 Refused

S7. What behaviors are these? [DO NOT READ]

Action	S7a. Yes or No	S7b– From 0 to 10, where 10 is most influential, how would you rate the influence of your PV installation on this behavioral change?
Increase thermostat settings in the summer		
Decrease thermostat settings in winter		
Decrease temperature setting on water heater		
Decreased hot water use		
Turn the lights off more		
Decreased the number of electrical equipment plugged in		
Installed motion sensors for lighting		
Other		
Other		

DEMOGRAPHICS

Finally, I just have a few concluding questions about you and you home. These questions are for statistical purposes only, and cannot be used to identify you or your home. If you are uncomfortable with any of the questions, please feel free to skip to the next one.

D1. What is the square footage of your home?

[DO NOT READ CHOICES]

1 Less than 1,500 sq ft
2 1,500 to less than 2,000 sq ft
3 2,000 to less than 2,500 sq ft
4 2,500 to less than 3,000 sq ft
5 3,000 to less than 4,000 sq ft
6 4,000 to less than 5,000 sq ft
7 5,000 or more sq ft

-98 Don't know

-99 Refused

D2. How many people live in your home?

[DO NOT READ CHOICES]

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7 or more

-98 Don't know

-99 Refused

D3. What is the highest level of education that you have completed?

[READ CATEGORIES]

1. Less than high school
2. High school graduate
3. Technical or trade school graduate
4. Some college
5. College graduate
6. Some graduate school
7. Graduate degree

-98 Don't know

-99 Refused

D4. What is your age? Are you …

1. 18 to 24
2. 25 to 34
3. 35 to 44
4. 45 to 54
5. 55 to 64
6. 65 or over

-98 Don't know

-99 Refused

D5. Which category best describes your total household income in 2010 before taxes? Please stop me when I get to the appropriate category.

1. Less than $50,000
2. $50,000 to $74,999
3. $75,000 to $99,999
4. $100,000 to $149,999
5. $150,000 or more

-98 Don't know

-99 Refused

D6. **[DO NOT READ]** Gender …

1. Female
2. Male

This concludes the survey. Thank you for taking the time to answer these important questions.

NYSERDA ARRA Renewable Energy Programs, Interview Guide, PON 1686 Installers

FINAL

Introduction

Hello. My name is _____ and I am calling from _____on behalf of the New York State Energy Research and Development Authority (NYSERDA) regarding NYSERDA's Competitive Capacity-Based PV Incentive Program. May I please speak with [CONTACT NAME]?

[If contact is available, when he or she gets on the line, repeat intro if necessary and then continue]

[If contact not available, read "Maybe you can help me anyway?" and continue]

I would like to ask you some questions regarding NYSERDA's Competitive Capacity-Based PV Incentive Program, otherwise known as PON 1686, and the solar photovoltaic [PHOTO vole tay ik] systems you have recently installed through the program. You may recall a letter from NYSERDA stating that we would be in contact. Are you the person who is most knowledgeable about your company's experience with NYSERDA's solar incentive programs?

1. Yes [SKIP TO I3]
2. No [Go to I2]

I2. I would like to speak with someone who is familiar with your company's experience with NYSERDA's ARRA funded Competitive Capacity-Based PV program, known as PON 1686. Do you know who that may be?
   1. Yes [ASK FOR NAME AND TO BE CONNECTED WITH THAT PERSON. IF NOT AVAILABLE, ASK FOR CONTACT INFORMATION AND BEST TIME TO CALL]
   2. No [ASK TO SPEAK WITH SOMEONE WHO MAY BE FAMILIAR WITH THE PROGRAM]

   -98 Don't know [ASK TO SPEAK WITH SOMEONE WHO MAY BE FAMILIAR WITH THE PROGRAM]

   -99 Refused [ASK TO SPEAK WITH SOMEONE WHO MAY BE FAMILIAR WITH THE PROGRAM]

I3. The interview should take about 30 minutes. Is now a good time to talk?
   1. Yes [CONTINUE]
   2. No [ARRANGE FOR DAY AND TIME TO CONDUCT INTERVIEW]

[IF NECESSARY, OFFER THE CONTACT NAME FROM BELOW AS THE PERSON TO CONTACT WITH ANY QUESTIONS ABOUT THE VALIDITY OF THE RESEARCH.]

Rebecca Reed	Project Manager, NYSERDA	866-697-3732 ext. 3559

Motivation and Awareness

M1. How did you hear about NYSERDA's Competitive Capacity-Based PV Incentive Program? [RECORD VERBATIM AND MARK ALL THAT APPLY]

1. Email or direct marketing from NYSERDA
2. The NYSERDA RFP
3. Through participation in other NYSERDA program [SPECIFY]
4. NYSERDA website
5. Story in the media
6. Colleague, friend, family -- word of mouth

-97 Other [PLEASE SPECIFY]
-98 Don't know
-99 Refused

M2. Are you aware that NYSERDA's Competitive Capacity-Based PV Incentive Program is funded by the American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Recovery Act."

1. Yes
2. No

-98 Don't know
-99 Refused

M3. In the absence of this program, do you normally work with either NYSERDA's Power Naturally Program or the Long Island Power Authority's (LIPA's) Solar Pioneer program? [Check all that apply]

1. NYSERDA Power Naturally
2. LIPA Solar Pioneer
3. Both NYSERDA and LIPA programs
4. Neither program
5. Was not aware of NYSERDA Power Naturally
6. Was not aware of LIPA Solar Pioneer

-98 Don't know
-99 Refused

M4. Since NYSERDA / LIPA [REFER TO M3 FOR NYSERDA AND/OR LIPA] already has programs to support PV projects, why did your firm choose to participate in this program? [SELECT ALL THAT APPLY]

1. Impression that funds were more reliable and available
2. Fewer administrative steps to obtain funds
3. More cost-effective for customers
4. This program covered the entire state
5. Was not aware of the other program
6. Other [RECORD RESPONSE]:

-98 Don't know
-99 Refused

End User Awareness

Next I have some questions about your customers who have installed PV systems through NYSERDA's Competitive Capacity-Based PV Incentive Program. Please answer the questions as they apply to your customers who installed their systems through this program specifically and not all of your customers.

A1. To the best of your knowledge, approximately what percent of your Competitive PV customers were aware that their PV system price was reduced because of NYSERDA's Competitive Capacity-Based PV Incentive Program? [RECORD %]

A2. [If A1 > 0] Did you tell these customers about the program, or did they find out about it in some other way?

1. I told them
2. They found out in some other way
3. Some already know, and I told others

-98 Don't know
-99 Refused

A3. [IF A2 = 2 or 3] If you did not tell them, to the best of your knowledge, how did your customers find out about the program? [RECORD RESPONSE]

1. News/Media story
2. Advertising (non-direct communication from NYSERDA)
3. Direct communication from NYSERDA
4. Friends/family
5. Other [RECORD RESPONSE]:

-98 Don't know
-99 Refused

A4. For PV systems installed through NYSERDA's Competitive Capacity-Based PV Incentive Program, did you offer the same price per kW installed to all your customers, or did different customers get different prices per kW? For example, did you offer different incentives based on the size of the system, the difficulty of installing the system, or whether the customer is residential or commercial? Why? [RECORD VERBATIM AND MARK ALL THAT APPLY UNLESS OTHERWISE SPECIFIED]

1. Offer same incentive to all customers [DO NOT MARK ANY OTHER RESPONSES]
2. Vary incentives by sector (residential vs. commercial)
3. Vary incentives by size of system
4. Vary incentives by difficulty of installing systems
5. Vary for some other reason [SPECIFY _____)

-98 Don't know
-99 Refused

Freeridership

FR1. For your customers that installed PV systems through NYSERDA's Competitive Capacity-Based PV Incentive Program, to the best of your knowledge, what percentage would have installed a PV system through NYSERDA'S Power Naturally program if this program were not available? [RECORD %]

a. [IF FR1 > 0%], ASK: what percentage of these customers were able to install their systems sooner than expected because of the Competitive Capacity-Based PV Incentive Program? [RECORD %]

FR2. [IF M3= LIPA Solar Pioneer or Both NYSERDA and LIPA]What percentage would have installed a PV system through LIPA's Solar Pioneer program? [RECORD %]

a. [IF FR3 > 0%], ASK: what percentage of these customers were able to install their systems sooner than expected because of the Competitive Capacity-Based Incentive Program? [RECORD %]

FR3. What percentage of the customers that participated in the Competitive Capacity-Based PV Incentive Program would you say would not have installed a PV system at all without this program? [RECORD %]

FR4. For customers that would have installed systems under another program if the Competitive Capacity Based program were not available, how many projects were likely installed sooner because of the Competitive Capacity-Based PV Incentive Program? [RECORD %]

a. Probe: Do you know of any customers that waited to install in anticipation of this program? [Record response]

b. Probe: On average, how much sooner are systems installed under the Competitive Capacity based program, as opposed to the [Power Naturally or LIPA Solar Pioneer] program, being completed?

Diversion and Marketing of Program

Next, I have some questions about all of your PV customers, not just those that participated in the Competitive Capacity-Based PV Incentive Program.

D1. How do you determine whether to install a particular system with funding from the Power Naturally, Solar Pioneer, or the capacity based incentive programs?
   a. Probe: In what cases would you prefer to go through the Power Naturally or Solar Pioneer program?
   b. Probe: In what cases would you prefer to go through the Competitive Capacity-Based Incentive Program?
   [RECORD RESPONSE]

[ASK NEXT SERIES IF INSTALLER WORKS WITH NYSERDA POWER NATURALLY; M3 = NYSERDA Power Naturally or Both NYSERDA and LIPA; IF LIPA ONLY, GO TO D6**]**

D2. To the best of your knowledge, for all your customers, approximately what percentage is aware of the Power Naturally Solar PV program before they first contact you? [RECORD %]

D3. Do you market the Competitive Capacity-Based PV Incentive Program and the Power Naturally Solar PV program the same way?
   1. Yes
   2. No
      a. Probe: How do your marketing efforts differ between the two programs? [RECORD RESPONSE]
      b. Probe: How do your sales and marketing costs differ between programs? [RECORD RESPONSE]
   -98 Don't know
   -99 Refused

D4. Do you recommend to any of your customers that they install a PV system with incentives through the Competitive Capacity-Based PV Incentive Program rather than the Power Naturally Solar PV program?
   1. Yes
   2. No
   -98 Don't know
   -99 Refused

a. [IF D4=1] About what percentage of your customers? [RECORD %]

b. [IF D4=1] Why do you recommend they install a PV system with incentives through the Competitive Capacity-Based Incentive Program rather than the Power Naturally Solar PV program? [RECORD RESPONSE]

D5. Did any of your Competitive PV customers size the capacity of their PV systems beyond the size eligible for the Power Naturally program?
   a. [IF YES]: About what percentage of your customers?
   b. [IF YES]: About what percent did these customers change from their original capacity sizing?
   c. [IF YES]: Why did they increase the capacity of their system?

Diversion and Marketing of Program [ASK NEXT SERIES IF INSTALLER WORKS WITH LIPA SOLAR PIONEER; M3 = LIPA Solar Pioneer or Both NYSERDA and LIPA]**]**

D6. To the best of your knowledge, for all your customers, approximately what percentage is aware of the LIPA Solar Pioneer program before they first contact you? [RECORD %]

D7. Do you market the Competitive Capacity-Based PV Incentive Program and the LIPA program the same way?
   1. Yes
   2. No
      a. Probe: How do your marketing efforts differ between the two programs? [RECORD RESPONSE]
      b. Probe: How do your sales and marketing costs differ between programs? [RECORD RESPONSE]
   -98 Don't know
   -99 Refused

D8. Do you recommend to any of your customers that they install a PV system with incentives through the Competitive Capacity-Based PV Incentive Program rather than the LIPA program?
   1. Yes
   2. No
   -98 Don't know
   -99 Refused

a. [IF D8=1] About what percentage of your customers? [RECORD %]

b. [IF D8=1] Why do you recommend they install a PV system with incentives through the Competitive Capacity-Based PV Incentive Program rather than the LIPA program? [RECORD RESPONSE]

D9. Did any of your Competitive PV customers size the capacity of their PV systems beyond the size eligible for the Power Naturally program?

a. [IF YES]: About what percentage of your customers?
b. [IF YES]: About what percent did these customers change from their original capacity sizing?
c. [IF YES]: Why did they increase the capacity of their system?

D10. How has the hard deadline to spend ARRA funds affected your approach to customer outreach and sales? [RECORD RESPONSE]

Leveraging Resources

Next I have some questions about all of the PV systems you installed in 2008, 2009, and 2010.

LV1. Has your total volume of PV installations increased, decreased, or remained the same since you were awarded the Competitive Capacity Based PV Incentive program funding?

1. Increased
2. Decreased
3. Remained the same

-98 Don't know
-99 Refused

LV2. In total, how many kW did you install in 2010? [RECORD NUMBER]

LV3. In total, how many kW did you install in 2009? [RECORD NUMBER]

LV4. In total, how many kW did you install in 2008? [RECORD NUMBER]

LV5. How many projects has the Competitive Capacity-Based PV Incentive Program allowed you to install that you could not have installed under the Power Naturally or LIPA program? [RECORD NUMBER]

a. [IF LV4>0] Approximately what portion of your Competitive Capacity-Based PV projects has fallen into this category? [RECORD NUMBER]

LV6. Has the number of customers you've signed up through the Competitive PV program met your expectation so far? Would you say that the number of new installations:

1. Greatly below expectations
2. Below expectations
3. Met expectations
4. Exceeded expectations
5. Greatly exceeded expectations

-98 Don't know
-99 Refused

a. [IF LV5=1 or 2] Why do you believe that the number of new installations has been slower than expected?

LV7. In 2010, approximately what percent of your PV projects were funded through the Competitive Capacity-Based Incentive Program? NYSERDA's Power Naturally Solar PV? LIPA's Solar Pioneer program? How does this compare to 2009? To 2008?

Program	**2010**	**2009**	**2008**
NYSERDA ARRA			
NYSERDA Power Naturally			
LIPA Solar Pioneer			
Other?			
Total			

LV8. Are you ever able to offer additional discounts on top of the NYSERDA Competitive Capacity-Based PV Incentive Program?

1. Yes
2. No [SKIP TO LV13]

-98 Don't know [SKIP TO LV13]
-99 Refused [SKIP TO LV13]

a. [IF LV7=1] How do you offer such rebates? [RECORD RESPONSE]

b. [IF LV7=1] Are these funded by any other NYSERDA, utility, or other program?
   1. NYSERDA Programs → Please specify ? [RECORD RESPONSE]
   2. Utility Programs → Please specify ? [RECORD RESPONSE]
   3. Other Programs → Please specify ? [RECORD RESPONSE]
   -98 Don't know
   -99 Refused

c. [IF LV7=1] Are these funded from your own revenue stream (by cutting your own profit margin) in order to secure business?
   1. Yes
   2. No
   -98 Don't know
   -99 Refused

LV9. How many staff hours would you say you spend on funding applications under the ARRA program versus other programs? [RECORD RESPONSE]

LV10. Under the Competitive Capacity-Based PV Incentive Program, what is the average time between signing the contract to installing the PV system for a residential system? For a commercial system?

Other Economic Benefits

E1. Did your firm hire additional staff in 2010 as a result of increased business from the NYSERDA Competitive Capacity-Based PV Incentive Program?
   1. Yes
   2. No
   -98 Don't know
   -99 Refused

a. [IF E1=1] How many full time employees? [RECORD NUMBER]

b. [IF E1=1] How many part-time employees? [RECORD NUMBER]

Price Elasticity

I would like to get your insights about how the price of PV systems may affect the number of systems that get installed in households.

PE1. Given your experience in the industry, at what price per watt do you think the PV market will be self-sustaining and no longer need the support of incentive programs?

PE2. We understand that incentives are needed in the current market to see PV and grow the industry, but we'd like you to help us look into the future of the industry. Without thinking about any specific incentive programs, [RECORD VERBATIM]

1. If prices were to decrease, how would that affect the capacity of systems you install?
2. How would your marketing approach change, if at all, as prices approach that of grid-supplied electricity?

PE3. If the installed cost, as paid by the customer, of a PV system were to decrease, how do you think this would affect your sales volume, in terms of kW installed per year? [RECORD IN TABLE]

1. What if the installed cost of a PV system were to increase? [RECORD IN TABLE]

Price Decrease ($/Watt)	Sales Volume Increase (%)	Price Increase	Sales Volume Decrease (%)
$0.50		$0.50	
$0.75		$0.75	
$1.00		$1.00	

Firmographics

F1. Approximately how many full-time equivalent workers does your company employ working on PV sales and installations?

F2. Including you, how many employees are North American Board of Certified Energy Practitioners (NABCEP) certified?

F3. What other types of certifications do you and your employees hold?

Type of Certification	Number of employees

Final: Is there anything you would like to add about NYSERDA, the ARRA incentive program, or anything else? [OPEN END]

I have no further questions at this time, thank you very much for your time and help! As an important member of this program we may wish to speak to you again at the end of 2011. Would that be ok with you? [Record yes or no]

Work Plan Description:

The Team shall conduct in-depth interviews with all seven PV vendors/installers taking part in PON 1686. Installers shall be interviewed late in 2010 to assess why they decided to take part in the program, the impacts of the NYSERDA ARRA funds on the number of end-users installing PV systems in 2010, the capacity of the PV systems installed in 2010, and the impact of the NYSERDA ARRA program on participation in NYSERDA's Power Naturally Solar PV program in 2010. The Team will repeat this line of questioning with PV installers in late 2011 to determine if any changes occurred during 2011. Although the Team would prefer to wait until 2012 to repeat the line of questioning, the evaluation timeline will not allow for interviews in 2012 unless NYSERDA extends the evaluation beyond the deadlines set by the DOE. Furthermore, while we would prefer to interview the installers just once to avoid potential survey fatigue, conducting a single interview in late 2011 would limit the reliability of respondents' assessments of remembering why they took part in the program.

Potential interview questions for PV installers taking part in PON 1686 include, but are not limited to, the following:[1]

- *Motivation* (to be assessed only in late 2010): How did you become aware of the NYSERDA ARRA-funded program and why did you decide to participate in the program?
- *End-User Awareness* (to be assessed in both 2010 and 2011): Are end-users aware of the NYSERDA ARRA program and rebates due to the program? If so, when and how did the end-users become aware of the program? Did you tell them about the program, or did they already know? Did installers market programs to end-users differently when using fixed incentives in other NYSERDA programs versus their own setting of incentives for this program? Did installers offer different incentive levels to different customers; e.g., such as, did incentives vary by sector or system size? Did installers disclose incentives to end-users?
- *Diversion* (to be assessed in both 2010 and 2011): Were any end-users aware of NYSERDA's Power Naturally Solar PV program? Did you divert business away from the Power Naturally Solar PV program (or LIPA Solar Pioneer program) towards the ARRA program? Did any end-users increase their project beyond the size eligible for NYSERDA's Power Naturally (or LIPA's Solar Pioneer) solar PV program in order to participate in the NYSERDA ARRA program? If yes, why did they do so?
- *Leveraging Resources* (to be assessed in both 2010 and 2011): What percent of your PV projects were installed with the help of the NYSERDA ARRA program? What percent of your PV projects were installed with the help of NYSERDA's Power Naturally Solar PV (or LIPA's Solar Pioneer) program? What percent of your installations were helped by a utility program? What

[1] Note that the Team does not expect the PV installers to be knowledgeable about take back.

percent were installed without any ARRA or RPS incentive funds? How does this compare to 2010 (if asking in 2011)? 2009? 2008?

- *Freeridership* (to be assessed in both 2010 and 2011): For customers that participated in the NYSERDA ARRA program, what is the likelihood that they would have installed the same systems without the program?
- *Spillover* (to be assessed in both 2010 and 2011): Do you offer rebates through the NYSERDA ARRA program to all of your potential customers? Why or why not? What percent of your customers installed larger PV systems because of the NYSERDA ARRA program? Are you able to offer additional rebates on top of the rebate available by the NYSERDA ARRA funds? Have any of your customers taken additional actions to save energy or increase their generation capacity after having your system installed?
- *Other Economic Benefits* (to be assessed in 2011): Were you able to retain employees that you might otherwise have let go due to increased installation projects as a result of the ARRA program? Did you expand your workforce because of the ARRA program? If so, how many new employees did you hire for full vs. part time jobs? Did the taxes you pay (income, property, school, etc.) increase because of your participation in the ARRA program? If so, by what percent? Did you purchase additional goods and services as a result of the NYSERDA ARRA program? If so, what portion of those goods and services did you buy in New York State?

MEMO

To:
CC:
From:
Date:
RE:

The grant recipient to be interviewed is the XX. The project consists of XX.

We will interview XX. His contact information is below. The aim of the survey is to obtain answers to questions laid out in the Action Plan.

CONTACT INFO

Here is a suggested TIMELINE in order for the interview to take place as soon as possible:

Timeline:
XX

Questions for the purpose of Gross Impact Evaluation, Economic Impact, Emissions Impacts
INDIVDUAL FOR EACH PROJECT

Questions to be asked for purpose of Awareness and Motivation

Awareness
First we would like to ask you a few questions about your transportation portion of the American Recovery and Reinvestment Act (ARRA) funded projects and how you found out about the NYSERDA ARRA program.

How did you hear about the RFP 1613, Project Implementation Funding? Highlight all that apply

1. Through NYSERDA's FlexTech program
2. Through participation in other NYSERDA program _____
3. The NYSERDA RFP
4. Program marketing
5. Outreach by NYSERDA staff
6. Contractor / installer
7. NYSERDA website
8. Story in the media
9. Colleague, friend, family -- word of mouth

97. Other [PLEASE SPECIFY] _____
98. Don't know
99. Refused

Motivation
M1. Why did you apply for funds from NYSERDA to implement this project? Please focus your answer on why you applied for the funds, not why you decided to install the measure(s). [DO NOT READ RESPONSES; HAVE RESPONDENT BE SPECIFIC; CHOOSE FROM RESPONSES PROVIDED OR FILL IN RESPONSE IF NOT AMONG LISTED RESPONSES; ALLOW MORE THAN ONE RESPONSE]

1. Could not find funding from other sources
2. Contractor suggested I apply
3. Other funding sources required a higher match or leverage
4. Thought chances of getting funded were good
5. Could not afford to do the project without funding

97. Other [PLEASE SPECIFY] _____
98. Don't know
99. Refused

M2. At the time you applied for funds from the NYSERDA program, were you aware that the funds provided through this program were provided by the Federal Government (via the U.S. Department of Energy) as part of the American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Federal Stimulus Bill"?

1. Yes
2. No [GO TO 0]

98. Don't know [GO TO 0]

99. Refused [GO TO 0]

M3. [IF YES TO 0] To what extent was your decision to apply for funds from NYSERDA affected by the fact that the funds were provided by the Recovery Act? Please use a scale from 1 to 5 in which 1 is a critical negative factor (a drawback to participation), 2 is somewhat of a factor, 3 is not a factor at all, 4 is a somewhat positive factor and 5 is a critical positive factor (a driver to participation) in the decision to apply.

1. A critical negative factor (A drawback to participation)
2. Somewhat of a factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (A driver to participation)

98. Don't know

99. Refused

M4. To what extent was your decision to apply for funds from NYSERDA affected by WHEN the funds would be available to you? Please use a scale from 1 to 5 in which 1 is a critical negative factor (a drawback to participation), 2 is somewhat of a factor, 3 is not a factor at all, 4 is a somewhat positive factor and 5 is a critical positive factor (a driver to participation) in my the decision to apply.

1. A critical negative factor (A drawback to participation)
2. Somewhat of a factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (A driver to participation)

98. Don't know

99. Refused

M5. Prior to participating in the NYSERDA ARRA program, had you participated in a previous NYSERDA transportation Program?

1. Yes
2. No [GO TO 0]

98. Don't know [GO TO 0]

99. Refused [GO TO 0]

M6. Please describe the project or program _____

Questions to be asked for purposes of Attribution

Economy

Next we have some questions about the funding sources for your transportation project. The first few questions are about any finances you may have secured before you applied for the NYSERDA ARRA funds.

E1. Before applying for the NYSERDA ARRA funds, had you attempted to secure financing for this project?

1. Yes
2. No [GO TO AF1]
98. Don't know [GO TO AF1]
99. Refused [GO TO AF1]

E2. [IF 0 = 1 (YES)] Had you successfully secured at least some other financing for this project before applying for the NYSERDA funds?

1. Yes [GO TO E3]
2. No [GO TO AF1]
98. Don't know [GO TO AF1]
99. Refused [GO TO AF1]

E3. [IF **Error! Reference source not found.**= 1 (YES)] How did you use the previously secured funds?

1. Used them to pay for part of the costs of the project [GO TO AF2]
2. Declined the funds BEFORE receiving NYSERDA ARRA funds [ASK 0 AND 0]
3. Declined the funds AFTER receiving NYSERDA ARRA funds [ASK 0 AND 0]
4. Lost the funds [ASK 0 AND 0]
5. Have not used previously secured funds yet [GO TO AF2]
6. Other [PLEASE SPECIFY]

E4. [IF E3= 4 (LOST THE FUNDS)] Why did you LOSE the funds?

1. Tightening of the credit market
2. Funding source said they were no longer available
3. Could not meet requirements set forth by the funding source
97. Other [SPECIFY]

E5. [IF E3= 4 (LOST THE FUNDS)] Did NYSERDA ARRA funds substitute for the funds that you lost, or did something else happen?

1. Yes, NYSERDA ARRA funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

97. Other [SPECIFY]

[IF ALSO RESPONDED E3= 2 OR 3 CONTINUE TO 0; OTHERWISE, SKIP TO 0]

E6. [IF E3= 2 OR 3 (DECLINED THE FUNDS)] Why did you DECLINE the funds?

1. Could not meet requirements set forth by the funding source
2. Requirements set forth by funding sources were burdensome

97. Other [SPECIFY]

E7. [IF E3= 2 OR 3 (DECLINED THE FUNDS)] Did NYSERDA ARRA funds substitute for the funds that you declined , or did something else happen?

1. Yes, NYSERDA ARRA funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

97. Other [SPECIFY]

E8. [IF E3= 2 or 3 or 4 (DECLINE OR LOST FUNDS)] If the NYSERDA ARRA funds had not been available, what is the likelihood that you would have still completed this transportation project?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

Alternative and Additional Funding

Next we have a few questions about the funding you secured for your transportation project.

AF1. If the NYSERDA ARRA funds for the transportation project had not been available, what is the likelihood that you would have performed some type of transportation project?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

AF2. Did the NYSERDA ARRA award allow you to divert funds that had been budgeted for this project to go to other projects in need of financing?
1. Yes [GO TO NEXT QUESTION]
2. No [GO TO **Error! Reference source not found.**]

AF3. [IF YES TO AF2] If the NYSERDA ARRA funds had not been available, what is the likelihood that you would have diverted internal funds to other projects?
1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

AF4. [IF YES TO AF2] Did any of these diverted funds finance the installation of additional renewable energy or energy efficiency projects?
1. Yes [GO TO NEXT QUESTION]
2. No [GO TO AF7]

AF5. [IF YES TO AF4] Please explain what type of renewable or energy efficiency projects you completed with the diverted funds, noting if the measure also received funds from another NYSERDA or utility program.

1. Solar photovoltaic (PV)
2. Solar hot water
3. Solar thermal
4. Biomass boiler
5. Wind turbine
6. Energy efficient lighting
7. Energy efficient heating system
8. Energy efficient cooling system
9. Energy efficient hot water system
10. Insulation
11. Weatherization/Envelope

97. Other [PLEASE SPECIFY]

AF6. Which renewable or energy efficiency projects also received funds from another NYSERDA or utility program? [PLEASE SPECIFY]

AF7. [IF NO TO AF4] How did you use the diverted funds?
1. Other capital improvement projects [SPECIFY]_____
2. Staff retention

3. New staff hires
97. Other [PLEASE SPECIFY]

Free Ridership

FR1. At which point in the planning process was this project when you first heard about the NYSERDA ARRA program?

1. Planned entire project after hearing about the NYSERDA program
2. Project was being planned, but plans were not finalized
3. Project was planned but had no funding
4. Project was planned but only partially funded
5. Project was planned and fully funded, but decided to pursue NYSERDA funding

97. Other [SPECIFY]
98. Don't know
99. Refused

FR2. [IF FR1 = 1] Did you plan the project because of the availability of the NYSERDA ARRA program funds, or would you have planned the project without the program?

1. Planned the project because of the NYSERDA program
2. Would have planned the project without the program

98. Don't know
99. Refused

FR3. [IF FR1 NE 1] Did you have to make any changes to your existing plans in order to receive the NYSERDA ARRA funds?

1. Yes
2. No

98. Don't know
99. Refused

FR4. [IF FR3 = 1 YES] Please describe how the plans were changed [PLEASE SPECIFY] _____

FR5. On a scale of one to five, where one is "not at all likely", two is somewhat likely, three is neither likely or unlikely, four is somewhat likely and five is "very likely", please rate the likelihood that you would have completed this project without the NYSERDA ARRA funds. [RECORD RESPONSE]

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely

5. Very likely
98. Don't know
99. Refused

FR6. [IF 0 = 1 TO 4] What might have kept you from completing this project without the NYSERDA ARRA funds? [PLEASE SPECIFY]

_____

FR7. [IF 0 greater than 1, 98 (Don't know) or 99 (refused)] If the NYSERDA ARRA funds had not been available, would you have completed the exact same transportation project, or would you have completed a project that differed in some ways (e.g., different scale, efficiency level, scope)
1. Same
2. Different
98. Don't know
99. Refused

FR8. [IF 0 = 2 (DIFFERENT measures)] [PROBE FOR SCOPE OF PROJECT, ETC. AND ASK RESPONDENT TO BE AS SPECIFIC AS POSSIBLE] _____

FR9. [IF 0 greater than 1, 98 (Don't know) or 99 (refused)] If the NYSERDA ARRA funds had not been available, would you still have installed the specified transportation measure(s) at the same time as you did with the NYSERDA funds, earlier, or later?
1. Same time
2. Earlier
3. Later
98. Don't know
99. Refused

FR10. [IF 0 = 2 (earlier) or 3 (later)] How much [earlier / later] would you have installed the measure(s)? [PLEASE SPECIFY]
_____ Years [and / or] _____ Months ! Q`2
98. Don't know
99. Refused

FR11. [IF 0 = 2 OR 3] Why would you have installed the specified transportation measure at a different time? [PLEASE SPECIFY]

Spillover

S1. Since installing the specified transportation measure through the NYSERDA ARRA program, have you taken any additional actions to save energy?

1. Yes
2. No
98. Don't know
99. Refused

S2. [IF 0 = 1 (YES)] What additional actions have you taken? [Open Ended]
1. Encouraged staff members to take energy savings actions [SPECIFY TYPES]
2. _OTHER _____

S3. [IF 0 = 1 (YES)] On a scale of one to five, where one is "no influence at all" two is "a little influence", three is "neutral", four is "a fair amount of influence" and five is "a great deal of influence" please rate the influence that participating in the NYSERDA ARRA program had on your decision to take EACH additional energy-saving actions? [TECHNICIAN, PROBE FOR EACH ADDITIONAL ACTION IN 0 AND RECORD RESPONSE]

_____

Close – 1. Is there anything else you would like to tell us about your participation in the ARRA Transportation program?

Close – 2. Thank you very much for your time.

NYSERDA Energy Conservation Studies Impact Evaluation 2011

Measure Adoption Rate (MAR), Program Overlap and Attribution Telephone Survey

Supplier Contract Number:		Applicant Name:	
Participant Contact:		Contact Phone:	
Contact Title:			
Participant Contact Address:			
Contact E-Mail:			
Alternative Contact:		Alternative Contact Phone:	
Alternative Contact Title:		Alternative Contact E-Mail:	
Date ARRA ECS Report (Rec'd Final Report):		Total Cost of ARRA ECS Study (from application file):	
NYSERDA Project Manager:	Rebecca Reed	NYSERDA Share:	
NYSERDA Project Manager Phone:	518-862-1090 x.3559 866-697-3732 3359	NYSERDA Project Manager E-Mail:	rlr@nyserda.org
ARRA ECS Service Provider:		Service Provider Contact:	
Service Provider Phone:		Service Provider E-Mail:	

Date of Survey: [ ]

Interviewer:

Hello, my name is _____ and I work for ERS. We are under contract to the New York State Energy Research and Development Authority (also known as NYSERDA) and I'm calling on their behalf.

We're contacting a small sample of the organizations that received energy conservation studies, PON 4, with NYSERDA's assistance funded by the American Reinvestment and Recovery Act (known as

ARRA) in 2009 and 2010. Your firm has been chosen. Input from facility managers, like you, is crucial to our efforts to assess program accomplishments and to improve NYSERDA's programs.

[IF THEY EXPRESS HESITATION USE AN APPROPRIATE COMBINATION OF THE FOLLOWING.]

Security. Your responses will not affect your ability to participate in the program in the future.

Sales concern. I am not selling anything. I simply want to understand what factors were important to your company when deciding whether to implement recommendations you received as a result of participating in this program.

Contact. If you would like to talk with someone from NYSERDA about this effort, you can call

Evaluation Project Manager: Rebecca Reed 866-697-3732 Ext. 3559

Obtaining Appropriate Interviewees and Contact Information for MAR Survey v. NTG Survey

We are conducting two types of surveys. The first will be with the Facility Manager or equipment manager that can address technical aspects of whether study recommendations were installed or adapted and then installed. The second will be with a senior decision-maker who decides whether to conduct these types of studies and to approve spending for energy-using equipment or systems.

SCR1: I have you listed as the contact for the project at that received ARRA funding for an Energy Conservation Study. Are you the appropriate person to discuss whether study recommendations were installed for the ARRA study provided for [**Company name and location**]?

1. Yes - **SCR2 Below**
2. No ⇩

[IF SCR1 = NO]: Could you please direct me to, or provide me with the name of the person who is the most qualified to discuss this project and his/her phone number and e-mail?

(Qualified contact name) [ ] (Qualified contact's phone) [ ]

(Qualified contact's e-mail) [ ] **(Then go to SCR2, if No ask modified SCR2)**

SCR2: Are you (also) the appropriate person to discuss the decision-making process your organization went through in making decisions about whether to fund the study and take actions on the recommendations?

1. Yes **(Next Page)**
2. No ⇩

[IF SCR2 = NO]: Could you please direct me to, or provide me with the name of the person who is the most qualified to discuss these decisions and his/her phone number and e-mail?

1. Yes**(If SCR1 was No Terminate, If SCR1 was Yes, Survey will be much longer than 15 min)**

(Qualified contact name) [ ] (Qualified contact's phone)

[ ]

(Qualified contact's e-mail) [ ]

2. No or don't know

   [If possible] ERS's best guess of decision-maker from file materials

   (Qualified contact name) [ ] (Qualified contact's phone)

   [ ]

   (Qualified contact's e-mail) [ ]

[IF SCR1 = NO AND SCR2 = NO, TERMINATE]

This survey will take about 15 minutes to complete. We recognize that this is a sizeable time commitment and we can proceed now over the phone; or we can schedule a more convenient time. As another option, we can e-mail or FAX the survey to for you to fill out over the next week.

1. Can discuss now
2. Call back on [ ] at (*time*): [ ]
3. Fax survey to: [ ]

[IF SCR1 = NO, RESPONDEND IS A DECISIONMAKER WITHOUT INSTALLATION STATUS KNOWLEDGE (UNLIKELY BUT POSSIBLE). SKIP TO AWARENESS A1] ***Page 7***

NYSERDA Energy Conservation Studies Impact Evaluation 2011

Measure Adoption Rate (MAR), Program Overlap and Attribution Telephone Survey

General Instructions

The judgment of program participants is important to this research effort. We are looking for best estimates and opinions as a starting point for characterizing participating projects and assessing the accomplishments of the ARRA Energy Conservation Study Program.

If you have an opinion or even a rough judgment regarding the answer to a question, please provide it as an estimate for the question.

[IF THEY EXPRESS HESITATION USE AN APPROPRIATE COMBINATION OF THE FOLLOWING:]

Security. Your responses will not affect your ability to participate in the program in the future.

Sales concern. I am not selling anything. I simply want to understand what factors were important to your company when deciding whether to implement recommendations you received as a result of participating in this program.

Contact. If you would like to talk with someone from NYSERDA about this effort, you can call

Evaluation Project Manager: Rebecca Reed 866-697-3732 x3559

*THE SURVEY ENGINEER MUST COMPLETE THE TABLE ON THE NEXT PAGE FROM ENERGY CONSERVATION STUDY **PRIOR** TO THE CALL.*

ONLY INCLUDE "RECOMMENDED" MEASURES IN THE TABLE. DO NOT INCLUDE ALTERNATIVES TO RECOMMENDED MEASURES, MEASURES STUDIED BUT NOT RECOMMENDED, OR MEASURES FOR WHICH THE AUTHORS ADVISE ADDITIONAL STUDY BEFORE THEY CAN BE RECOMMENDED.)

INCLUDE NEGATIVE SAVINGS VALUES IN TABLE WHERE APPROPRIATE.

IF THE STUDY RECOMMENDED MORE THAN 5 MEASURES THEN MEASURES MAY BE GROUPED FOR INTERVIEWING PURPOSES. IF THE STUDY RECOMMENDED MORE THAN 8 MEASURES, THEY MUST BE GROUPED. GROUPING RULES:

1) *FIRST, GROUP BY TECHNOLOGY TYPE.*
2) *SECOND, GROUP BY CAMPUS OR BUILDING.*
3) *IF (1) AND (2) RESULT IN MORE THAN 5 TO 8 GROUPS, ONLY INTERVIEW THE CUSTOMER ON THE FIVE MEASURES/GROUPS WITH THE MOST SAVINGS (USE 0.01 KWH PER $MMBTU_{SOURCE}$ WHEN ASSESSING THIS).*

IF THERE ARE MULTIPLE FOSSIL FUELS ASSOCIATED WITH A MEASURE OR MEASURE GROUP, NOTE SAVINGS AND FUEL TYPES FOR EACH.]

NYSERDA Energy Conservation Studies Impact Evaluation 2011

MAR, Overlap and Attribution Telephone Survey

Description of Measures or Measure Groups	Measure Technology (EE, Renewables, Transportation, CHP)	Sector/Building Type	Measure Name	Measure End Use	Measure type (recommended, alternative, consider for further study, not recommended)	Fuel Type 1	Site Savings KWh/yr	Site Savings Natural Gas therms/yr	Site Savings Non-Gas Fossil Fuel Site MMBtu/yr1	Non-Gas Fossil Fuel Type	Site Savings Combo or Unknown Fuels MMBtu/yr
1											
2											
3											
4											
5											
6											
7											
8											

Additional Notes:

NYSERDA Energy Conservation Studies Impact Evaluation 2011

MAR, Overlap and Attribution Telephone Survey

Questions

First I would like to review the measures recommended in the study to learn about the status.

MAR1. [READ EACH MEASURE FROM PRIOR PAGE, ONE AT A TIME. ELABORATE AS NECESSARY TO REMIND RESPONDENT, SUCH WHICH BUILDING OR CAMPUS, AMOUNT OF SAVINGS, ETC.] Did you implement all or part of this measure?

MAR2. *[IF MAR1=PARTIAL]* About what percentage of the measure did you implement?

MAR3. *[IF MAR1 = YES ALL OR PARTIAL]* When did you complete the installation?

MAR4. *[IF MAR1 = NO OR PARTIAL]* Do you plan to implement it (or the balance of it) in the future?

MAR5. *[IF MAR4 = YES]* When?

Study Measure #	MAR1 Implemented (Y/N/Partial)?	MAR2 Partially implemented - % of recommended measure savings?	MAR3 Approximate installation date	MAR4 Do you plan to implement in the future (Y/N/Unsure)? *If partially implemented, ask for the unimplemented part of the measure*	MAR5 Expected future implementation date? *Note: Key date is before/after 12/31/2012*
1					
2					
3					
4					
5					
6					
7					
8					

Additional Notes:

If answer to SCR2 was NO stop here

NYSERDA Energy Conservation Studies Impact Evaluation 2011

MAR, Overlap and Attribution Telephone Survey

Awareness

Next we would like to ask you a few questions about your Energy Conservation Study and how you found out about the NYSERDA ARRA program.

A1. How did you hear about the NYSERDA Energy Conservation Studies Program? **Highlight all that apply**

1. Through NYSERDA's ARRA Energy Conservation Study program
2. Through participation in other NYSERDA program _____
3. The NYSERDA RFP
4. Program marketing
5. Outreach by NYSERDA staff
6. Contractor / installer
7. NYSERDA website
8. Story in the media
9. Colleague, friend, family -- word of mouth

97. Other [PLEASE SPECIFY] _____

98. Don't know

99. Refused

Go to M1

Motivation

M1. Why did you apply for funds from NYSERDA to implement this STUDY? Please focus your answer on why you applied for the funds, not why you decided to install any measure(s).

1. Could not find funding from other sources
2. Contractor suggested I apply
3. Other funding sources required me to match or leverage funds
4. Thought chances of getting funded were good
5. Could not afford to do the study without funding

97. Other [PLEASE SPECIFY] _____

98. Don't know

Go to M2

M2. At the time you applied for funds from the NYSERDA program, were you aware that the funds were provided by the Federal Government through the American Recovery and Reinvestment Act of 2009 (ARRA), also commonly referred to as the "Federal Stimulus Bill"?

1. Yes **[GO TO M3]**
2. No *[GO TO M4]*

98. Don't know *[GO TO M3]*

99. Refused *[GO TO M3]*

M3. [IF YES TO M2] To what extent was your decision to apply for funds from NYSERDA affected by the fact that the funds were provided by the American Recovery and Reinvestment Act of 2009 (ARRA)? Please use a scale from 1 to 5 in which 1 a critical negative factor and 5 is a critical positive factor in my decision to apply.

1. A critical negative factor (A drawback to participation)
2. Somewhat of a factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (A driver to participation)

GO TO M4

M4. To what extent was your decision to apply for funds from NYSERDA affected by **when** the funds would be available to you? Please use a scale from 1 to 5 in which 1 a critical negative factor and 5 is a critical positive factor in my decision to apply..

1. A critical negative factor (A drawback to participation)
2. Somewhat of a factor
3. Not at all a factor
4. Somewhat of a positive factor
5. A critical positive factor (A driver to participation)

GO TO E1

Economy

Next we have some questions about the funding sources for your energy conservation study. The first few questions are about any finances you may have secured before you applied for the NYSERDA ARRA funds.

E1. Before applying for the NYSERDA ARRA funds, had you attempted to secure financing for this study?

1. Yes **GO TO E2**
2. No [GO TO AF1] **PAGE 11**

98. Don't know [GO TO AF1]]
99. Refused [GO TO AF1]]

E2. *[IF E1 = 1 (YES)]* Had you successfully secured at least some other financing for this study before applying for the ARRA NYSERDA funds?

1. Yes [GO TO E3]
2. No [GO TO AF1]] **Page 11**

98. Don't know [GO TO AF1] **Page 11**

99. Refused [GO TO AF1] **Page 11**

E3. [IF E2= 1 (YES)] How did you use the previously secured funds?

1. Used them to pay for part of the costs of the Study [GO TO AF2]
2. Declined the funds BEFORE receiving NYSERDA ARRA funds [ASK E6 AND E7]
3. Declined the funds AFTER receiving NYSERDA ARRA funds [ASK E6 AND E7]
4. Lost the funds [ASK E4 AND E5]
5. Have not used previously secured funds yet [GO TO AF2] **Page 11**

-97 Other [PLEASE SPECIFY] **GO TO AF1 Page 11**

E4. [IF E3= 4 (LOST THE FUNDS)] Why did you LOSE the funds?

1. Tightening of the credit market
2. Funding source said they were no longer available
3. Could not meet requirements set forth by the funding source

GO TO E5

-97 Other [SPECIFY] **GO TO E5**

E5. [IF E3= 4 (LOST THE FUNDS)] Did NYSERDA ARRA funds substitute for the funds that you **lost**, or did something else happen?

1. Yes, NYSERDA ARRA funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

GO TO E8

-97 Other [SPECIFY]

[IF ALSO RESPONDED E3= 2 OR 3 CONTINUE TO E6; OTHERWISE, SKIP TO E8]

E6. [IF E3= 2 OR 3 (DECLINED THE FUNDS)] Why did you DECLINE the funds?

1. Could not meet requirements set forth by the funding source
2. Requirements set forth by funding sources were burdensome

GO TO E7

-97 Other [SPECIFY]

E7. [IF E3= 2 OR 3 (DECLINED THE FUNDS)] Did NYSERDA ARRA funds substitute for the funds that you **declined**, or did something else happen?

1. Yes, NYSERDA ARRA funds substituted for the lost funds
2. No, we substituted the lost funds from a source other than NYSERDA
3. No, we did not substitute the funds but the project was still able to move forward

GO TO E8

-97 Other [SPECIFY]

E8. [IF E3= **2 or 3 or 4** (DECLINE OR LOST FUNDS)] If the NYSERDA ARRA funds had not been available, what is the likelihood that you would have still completed this Energy Conservation Study?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

GO TO AF1

NYSERDA Energy Conservation Studies Impact Evaluation 2011

MAR, Overlap and Attribution Telephone Survey

Study Alternative and Additional Funding

Next we have a few questions about the funding you secured for your energy conservation studies project.

AF1. If the NYSERDA ARRA funds for the Energy Conservation Study had not been available, what is the likelihood that you would have performed some type of study, even one of a lower quality? **i.e., what is the likely hood that you would have tried to secure funding at some future date for a lower quality study**

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely **GO TO AF2**

AF2. If the NYSERDA ARRA funds for the Energy Conservation Study had not been available, what is the likelihood that you would have performed a study of at least the same or similar quality?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely **GO TO AF3**

AF3. Did the NYSERDA ARRA funds for the Energy Conservation Study cause you to conduct the study earlier than you would have without the program? How much earlier?

1. YES How much earlier? _____
2. NO

GO TO AF4

AF4. Did the NYSERDA ARRA award allow you to divert funds that had been budgeted for this Study to go to other projects in need of financing?

1. Yes [GO TO NEXT QUESTION] **AF5**
2. No [GO TO FR1] ⇨ **PAGE 15**

AF5. [IF YES TO AF4] If the NYSERDA ARRA funds had not been available, what is the likelihood that you would have diverted internal funds to other projects?

1. Not at all likely
2. Somewhat unlikely
3. Neither likely or unlikely
4. Somewhat likely
5. Very likely

AF6. [IF YES TO AF4] Did any of these diverted funds finance the installation of additional renewable energy or energy efficiency projects?

1. Yes [GO TO NEXT QUESTION] **AF7**
2. No [GO TO AF9]

AF7. [IF YES TO AF6] Please explain what type of renewable or energy efficiency projects you completed with the diverted funds?

1. Solar photovoltaic (PV)
2. Solar hot water
3. Solar thermal
4. Biomass boiler
5. Wind turbine
6. Energy efficient lighting
7. Energy efficient heating system
8. Energy efficient cooling system
9. Energy efficient hot water system
10. Insulation
11. Weatherization/Envelope
97. Other [PLEASE SPECIFY]

AF8

AF8. ~~**[IF YES TO ANY ITEM IN AF7]**~~ Did any of these renewable or energy efficiency projects also receive funds from another NYSERDA or utility program?

1. Yes [READ AND RECORD BELOW]
2. No [GO TO FR1] **PG 15**

[IF YES TO AF8] Which renewable or energy efficiency projects also received funds from another NYSERDA or utility program? [PLEASE SPECIFY] **GO TO OL1 PAGE 13**

AF9. [IF NO TO AF6] How did you use the diverted funds?

1. Other capital improvement projects [SPECIFY]
2. Staff retention
3. New staff hires
97. Other [PLEASE SPECIFY]

If MARI = Yes go to OL 1 page 13

IF MAR1 = NO (No adopted measures) THEN GO TO FR1. ***Page 15***

NYSERDA Energy Conservation Studies Impact Evaluation 2011

MAR, Overlap and Attribution Telephone Survey

Implementation Funding and Program Overlap

OL-1. In addition to the funding you received for the feasibility study, did you receive any financial assistance from NYSERDA for the implementation of the recommended measures?

____ Yes *(GO TO OL2)*

____ No *(GO TO OL3)*

____ Don't Know *(GO TO QUESTION 5)* ***OL 5***

OL-2. *[IF YES]* For which measures? **PRE LOAD FROM PAGE MAR-5**

Description of Measure(s)	NYSERDA Program that Funded the Measure
1	
2	
3	
4	
5	
6	
7	
8	

NYSERDA Program List Reference:

a. Project Implementation Funding for State Energy Program American Recovery and Reinvestment Act (ARRA)

b. Combined Heat & Power

c. Commercial / Industrial Performance Program

d. Loan Fund

e. New Construction Program

f. Existing Facilities Program (used to be ECIPP and CIPP)

g. Peak Load Management Program

h. Multifamily Building Performance Program

i. New York ENERGY STAR® Products Program

j. Solar Electric Incentive Program

k. Business Partners Commercial Lighting Program

l. Wind Incentives for Eligible Installers

m. Renewable Portfolio Standard Customer-Sited Tier Fuel Cell Program

n. Renewable, Clean Energy, and Energy Efficiency Product Manufacturing Incentive Program

o. Clean Energy Business Growth and Development

p. Smart Equipment Choices

q. Other *(describe)* _____

[THERE ARE MORE PROGRAMS THAN LISTED HERE (SOME EXPIRED), SO IT WILL BE UP TO THE SURVEY ENGINEER TO FIND THE APPROPRIATE PROGRAM IF THE ABOVE LIST DOES NOT APPLY FOR A GIVEN CUSTOMER.]

OL-3. Did you receive funding or other support for the study or installation from any other sources, such as your utility company, state or federal grants or tax benefits?

____ Yes *[CONTINUE]*

____ No *[SKIP TO OL5]*

____ Don't Know *[SKIP TO OL5]*

OL-4. *IF YES*,

What Received?	What For?	From Whom?
a. Funding	a. Study	a. Utility
b. Technical support	b. Installation	b. State or local govt.
c. Tax benefits	c. Other	c. Federal
d. Other		d. Other

Additional description if available (name of program, specific agency/utility, etc.):

_____

_____

_____

_____

OL-5. *[IF OL1 OR OL3 WAS "DON'T KNOW"]* Is there another person that might know if your organization received such funding?

____ Yes

(Qualified contact name) [ ] (Qualified contact's phone) [ ]

(Qualified contact's e-mail) [ ]

____ No or don't know

NYSERDA Energy Conservation Studies Impact Evaluation 2011

MAR, Overlap and Attribution Telephone Survey

Free Ridership

[IF THEY HAVE NOT INSTALLED ANY MEASURES (MAR1 = NO) NOR HAVE INTENTIONS OF DOING SO (MAR5 = NO) GO TO SPILLOVER, S1.] ***PAGE 18***

REFERENCE:

MAR1. [READ EACH MEASURE FROM PRIOR PAGE, ONE AT A TIME. ELABORATE AS NECESSARY TO REMIND RESPONDENT, SUCH WHICH BUILDING OR CAMPUS, AMOUNT OF SAVINGS, ETC.] Did you implement all or part of this measure?

MAR2. *[IF MAR1=PARTIAL]* About what percentage of the measure did you implement?

MAR3. *[IF MAR1 = YES ALL OR PARTIAL]* When did you complete the installation?

MAR4. *[IF MAR1 = NO OR PARTIAL]* Do you plan to implement it (or the balance of it) in the future?

MAR5. *[IF MAR4 = YES]* When?

READ TO THE RESPONDENT: You indicated from the previous Measure Adoption Rate questions you intend to install or have installed measures recommended by the Energy Conservation Study.

FR1. Prior to participating in the Energy Conservation Studies Program, were you planning to install any of the energy efficiency or demand measures or renewable or transportation measures recommended by the Energy Conservation Studies report?

1. YES *[CONTINUE]*
2. NO *[GO TO FR3 IF MAR4=YES or PARTIAL; OTHERWISE GOTO S1]* ***18***

97 Other *[SPECIFY]* _____

98 Don't know

99 Refused

FR2. Could you please describe any plans that you had to implement the measures prior to participating in the Energy Conservation Studies Program:

1. We had no formal plans for implementing measures. We had some preliminary, internal discussions but no plans and no contact with a vendor, contractor or installer.
2. We had taken initial steps toward considering efficiency equipment, renewable or transportation measures, such as requesting information from or generally discussing options with a vendor, contractor, or installer.
3. We had in-depth discussions of specific types of efficiency equipment, renewable or transportation measures, including the positive and negative attributes and costs.
4. We had identified specific efficiency equipment manufacturers and models or measures that we wanted to install, but had not yet begun the budgeting process.
5. We had identified specific efficiency equipment, manufacturers and models or measures; however, budgets did not support the completion of the project.
6. We had identified specific efficiency equipment, manufacturers and models and or measures and incorporated the project into our budget.
7. OTHER _____

[IF RESPONDENTS HAVE NOT INSTALLED ANY MEASURES, YET (MAR1 = "NO") GO TO SPILLOVER, S1, OTHERWISE CONTINUE.

FR3. Please briefly describe how the NYSERDA Energy Conservation Study Program influenced your decision to implement high efficiency measures at this site.

1. The NYSERDA program funding had no influence on the decision. The same type of system and the same capacity system would have been installed even without the program funding.
2. The NYSERDA program funding helped in making the final decision on the system that had already been thoroughly considered.
3. The NYSERDA program and funding helped in choosing to install a system that had been discussed but not thoroughly considered.
4. The NYSERDA program funding was a major driver in the decision to install the system.
5. The NYSERDA program funding was the primary reason that the system was installed.

[IF THIS QUESTION (FR3) HAS BEEN ANSWERED IN QUESTION FR2 (REGARDING PRIOR PLANS), THEN CONFIRM TO ANSWER FR3]

FR4. On a scale of 1 to 5, where 1 = "not at all important" and 5 = "very important," please indicate how important the Energy Conservation Study Program was in your decision to incorporate high efficiency measures at this site?

1. Not at all important
2. Somewhat unimportant
3. Neither important or unimportant
4. Somewhat important
5. Very important

[BASED ON EARLIER RESPONSES, ASK EITHER THE "LIKELIHOOD" QUESTION (FR5) OR THE "SHARE OF MEASURES" QUESTION (FR6), WHICHEVER IS MORE APPROPRIATE.]

FOR EXAMPLE, IF RESPONDENT IMPLEMENTED A SINGLE MEASURE, THEN THE "LIKELIHOOD" QUESTION MAY BE MOST APPROPRIATE; IF THEY IMPLEMENTED MULTIPLE MEASUREs, THEN THE "SHARE OF MEASURES" MAY BE MORE APPROPRIATE. SOME RESPONDENTS MAY BE ABLE TO OFFER VALID RESPONSES TO BOTH QUESTIONS.

[IF YOU ARE UNCERTAIN, ASK BOTH QUESTIONS. IF RESPONDENT CAN PROVIDE A RESPONSE TO EACH, THEN RECORD BOTH RESPONSES]

FR5. **[LIKELIHOOD]** What is the likelihood that you would have incorporated **[INSTALLED MEASURE]** with the same [high level of efficiency if EQUIPMENT or capacity/rating if RENEWABLE MEASURE] if your firm had not received the Energy Conservation Study Program's report or recommendations?

1. Definitely would NOT have incorporated measure of the same high level of efficiency/capacity/rating (0%)
2. May have incorporated measure of the same high level of efficiency/capacity/rating, even without the program. About what percent likelihood? _____%
3. Definitely would have incorporated measure of the same high level of efficiency/capacity/rating anyway (100%)

98. DON'T KNOW

99. REFUSED

FR6. **[SHARE OF MEASURES]** What percentage of these **[INSTALLED MEASURES]** would you have incorporated if you had not received the Energy Conservation Study Program's report or recommendations*? [ASK FOR UP TO THE TOP 5 INSTALLED MEASURES]*

[IF NECESSARY, OR IF THE FLOW OF THE INTERVIEW DICTATES, YOU MAY DERIVE THIS VALUE BY ASKING: 1) THE SHARE OF MEASURES THAT WOULD HAVE BEEN INCORPORATED (AT ANY EFFICIENCY) AND 2) THE SHARE OF INCORPORATED MEASURES THAT WOULD HAVE BEEN HIGH EFFICIENCY. A VARIABLE SHOULD BE CREATED IN THE RESPONSE DATASET FOR FREE-RIDERSHIP VALUE (FR) AS THE PRODUCT OF FR6 AND FR7]

[FILL IN EITHER THE "LIKELIHOOD" VALUE OR THE "SHARE OF MEASURES" VALUE OR BOTH VALUES FOR EACH RELEVANT MEASURE CATEGORY.]

MEASURE NAME	…WOULD HAVE BEEN INCORPORATED (AT HIGH EFFICIENCY) WITHOUT THE ENERGY CONSERVATION STUDY PROGRAM		
	LIKELIHOOD FR5		SHARE FR6
[INSTALLED MEASURE 1]	FR5_a	AND/OR	FR6_a
[INSTALLED MEASURE 2]	FR5_b	AND/OR	FR6_b
[INSTALLED MEASURE 3]	FR5_c	AND/OR	FR6_c
[INSTALLED MEASURE 4]	FR5_d	AND/OR	FR6_d
[INSTALLED MEASURE 5]	FR5_e	AND/OR	FR6_e

FR7. Most new equipment, design strategies, renewable or transportation measures have to meet current energy standards.

But let's just focus on the fact that some of your newly installed measures have even higher efficiencies than standard new [READ APPROPRIATE: equipment, renewable or transportation measure], and this new measures provide extra energy savings….

Overall, across all measures, what percent of these extra energy savings would have been achieved anyway, even if the Energy Conservation Study Program did not exist? Please provide a lower and upper bound, and then your best estimate.

[IF NEEDED FOR CLARIFICATION] For example, 50% means that half of the extra savings from the high efficiency equipment would have been achieved anyway. Remember, I'm asking only about the extra savings from incorporating high efficiency equipment instead of standard efficiency equipment.

FR7a. Lower bound ____ %

FR7b. Upper bound ____ %

FR7c. Best estimate ____%

Spillover

S1. Did your experience with the Energy Conservation Studies Program influence your organization to incorporate additional energy efficiency measures at this site that had not been recommended by the Energy Conservation Studies Program or any other NYSERDA programs (i.e., measures that would not have happened without the influence of the Study)? This includes installing measures discussed in the study but that were not expressly recommended.

1. Yes
2. No

98. Don't know

99. Refused

S2. Please describe the measure. _____

S3. *[IF S1 = 1 (YES)]* What additional actions have you taken? *[OPEN ENDED]*

1. Encouraged staff members to take energy savings actions *[SPECIFY TYPES]*
2. Installed energy savings measures
3. OTHER _____

S4. Was that measure addressed in the study?

1. Yes
2. No

98. Don't know

99. Refused

S5. How much are you expecting to save annually?
$_____

S6. *[IF S1 = 1 (YES)]* On a scale of one to five, where one is "no influence at all" and five is "a great deal of influence" please rate the influence that participating in the NYSERDA ARRA program had on your decision to take EACH additional energy-saving actions? *[PROBE FOR EACH ADDITIONAL ACTION IN S2 AND RECORD RESPONSE]*

1. No influence at all
2. Little influence
3. Neutral
4. Some influence
5. A great deal of influence

Spill-over Measure #	S2. Measure Description	S4. Addressed in Study? (Y/N/ Don't know)	S5. Savings *[CIRCLE UNITS. ENGINEER TO COMPLETE AFTER INTERVIEW IF IT WAS PART OF THE STUDY BUT NOT A RECOMMENDED MEASURE]*	S6. Level of Influence (1 to 5)
1			_____ $/yr kWh/yr kW therms/yr MMBtu/yr % of savings relative to	

				recommended+implemented measures Other _____	
2			_____	$/yr kWh/yr kW therms/yr MMBtu/yr % of savings relative to recommended+implemented measures Other _____	1

Firmographics

FG1. What is the Principal Activity of the organization in which the conservation study was completed?

1. Education
2. Food Sales
3. Food Service
4. Health Care
5. Lodging
6. Retail/Mercantile
7. Office
8. Public Assembly
9. Public Order and Safety
10. Religious Worship
11. Service
12. Warehouse and Storage
13. Manufacturing (Identify Industry Type e.g., chemical, food, paper, etc.)
14. Vacant
15. OTHER (Specify: _____)

-98. REFUSED

-99. DON'T KNOW

FG2. How many employees does your organization have?

1. Fewer than 5
2. 5 to 9
3. 10 to 19

4. 20 to 49
5. 50 to -97
6. 100 to 249
7. 250 or More

-98. REFUSED

-99. DON'T KNOW

FG3. How many locations/establishments does your organization have?

1. One
2. 2 to 5
3. 6 to 10
4. 11 to 20
5. More than 20

-98. REFUSED

-99. DON'T KNOW

Close-1. Is there anything else you would like to tell us about your participation in the ARRA Energy Conservation Studies program?

Close-2. *[ONLY IF AT LEAST ONE MEASURE HAS BEEN IMPLEMENTED AND FUNDED BY NYSERDA]* There is a related study to measure savings of implemented measures that is under way as well. Your site may be selected for an on-site visit for that research.

Close-3. Thank you very much for your time!

Appendix F:

FREERIDERSHIP ANALYSIS

F1. Appliance Rebate Program Area

F2. Energy Efficiency Program Area

F3. Renewable Energy Program Area

F4. Transportation Program Area

F5. Energy Conservation Studies Program Area

F1. APPLIANCE REBATE PROGRAM AREA

Approach

The determination of freeridership for purchases is based on participant *awareness* of the Appliance Rebate Program Area prior to making a purchase, and their *intention* to purchase the appliance in the absence of the program area.

The sequence for determining freeridership on bundled purchases under Option 2 uses a similar logic as for individual appliances, but requires knowing participants' intention to purchase all three appliances under similar circumstances.

Recycling freeriders are defined as rebate participants who would have permanently taken the appliance out-of-service in absence of the program area. This definition includes appliances that would have been removed from the household and disposed of or recycled and appliances that would have been kept and not used at all in the absence of the rebate. The survey questions that were used to determine recycling freeridership asked about usage, intention, and barriers. Survey questions that focused on usage are:

- *"Was the [appliance] in working condition when you decided to have it recycled?"*
- *"If you had kept it, most likely would you have it plugged in all of the time, plugged in just some of the time, or would you have stored it unplugged and unused?"*

The survey question that focused on intention asked:

- *"If the recycling rebate from New York's Great Appliance Swap Out Program had not been available, how soon do you think you would you have gotten rid of your [appliance]? Would you have gotten rid of it at the same time, within a year of when the Program took it, or more than a year later?"*

Survey questions that focused on barriers asked about two likely barriers to removal in absence of the program area: the need to physically remove the appliance from the home and the need to pay to have the appliance removed:

- *"If the recycling rebate from New York's Great Appliance Swap Out Program had not been available, would the need to physically move the [appliance] out of your house and/or transport it have prevented you from getting rid of it?"*
- *"If the recycling rebate from New York's Great Appliance Swap Out Program had not been available, how much, if anything, would you have been willing to pay your city, town, or someone else to remove or recycle your refrigerator for you?"*

Figure F-1 and Figure F-2 illustrate the survey questions that led to determining each individual respondent's freeridership status, both for the appliance purchase and for recycling program area elements. Responses to some of the questions provide a definitive non-freerider (NFR) designation (i.e., respondent had not planned to purchase the appliance(s) prior to learning about the rebate), while other questions used in combination determine whether or not freeridership (FR) or partial freeridership (PFR) was assigned. Definitive freeridership designation is indicated as a box with a dark left banner margin.

Figure F-1. Freeridership Pathways for Purchases Under Option 1, Appliance Rebate Program Area

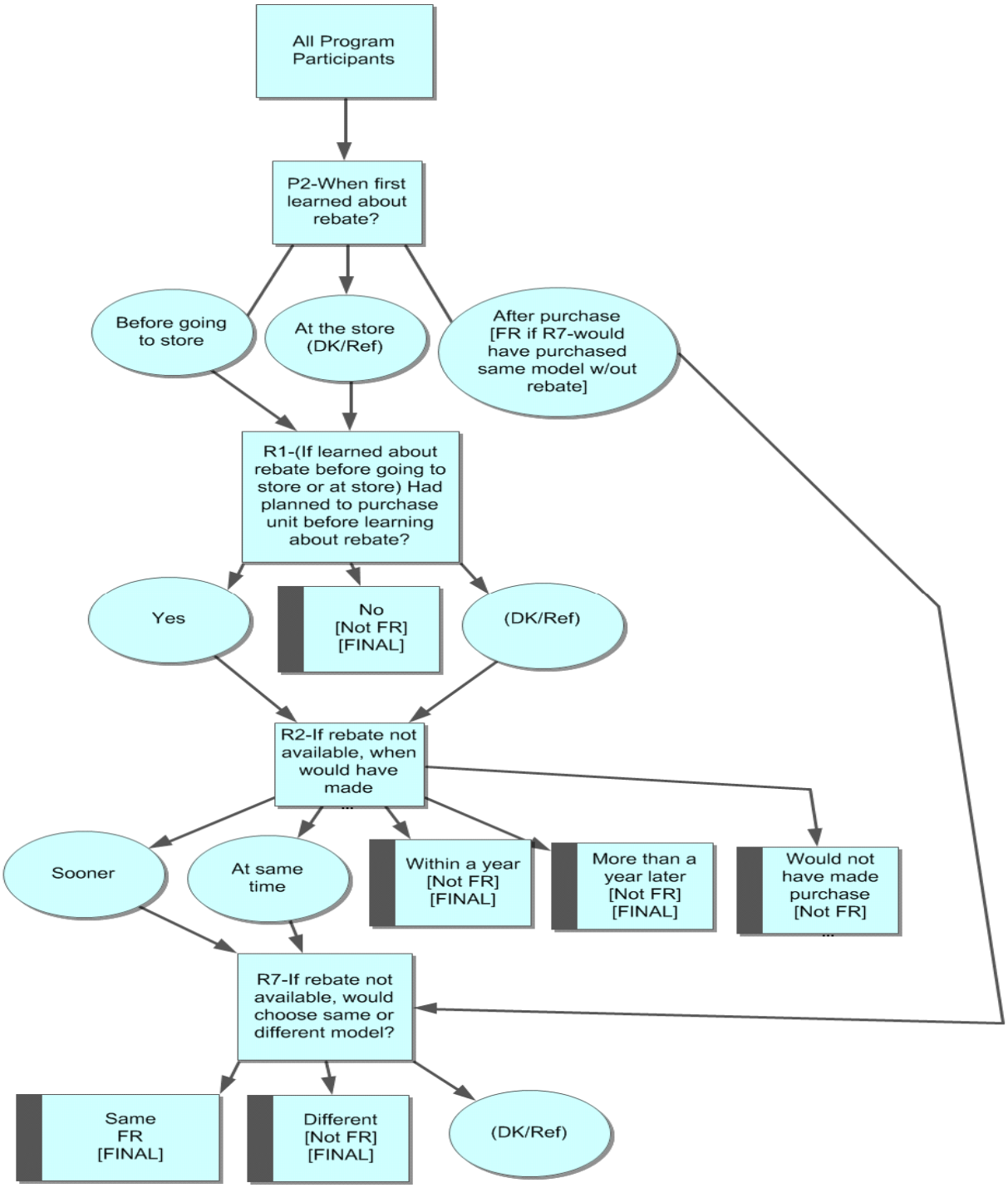
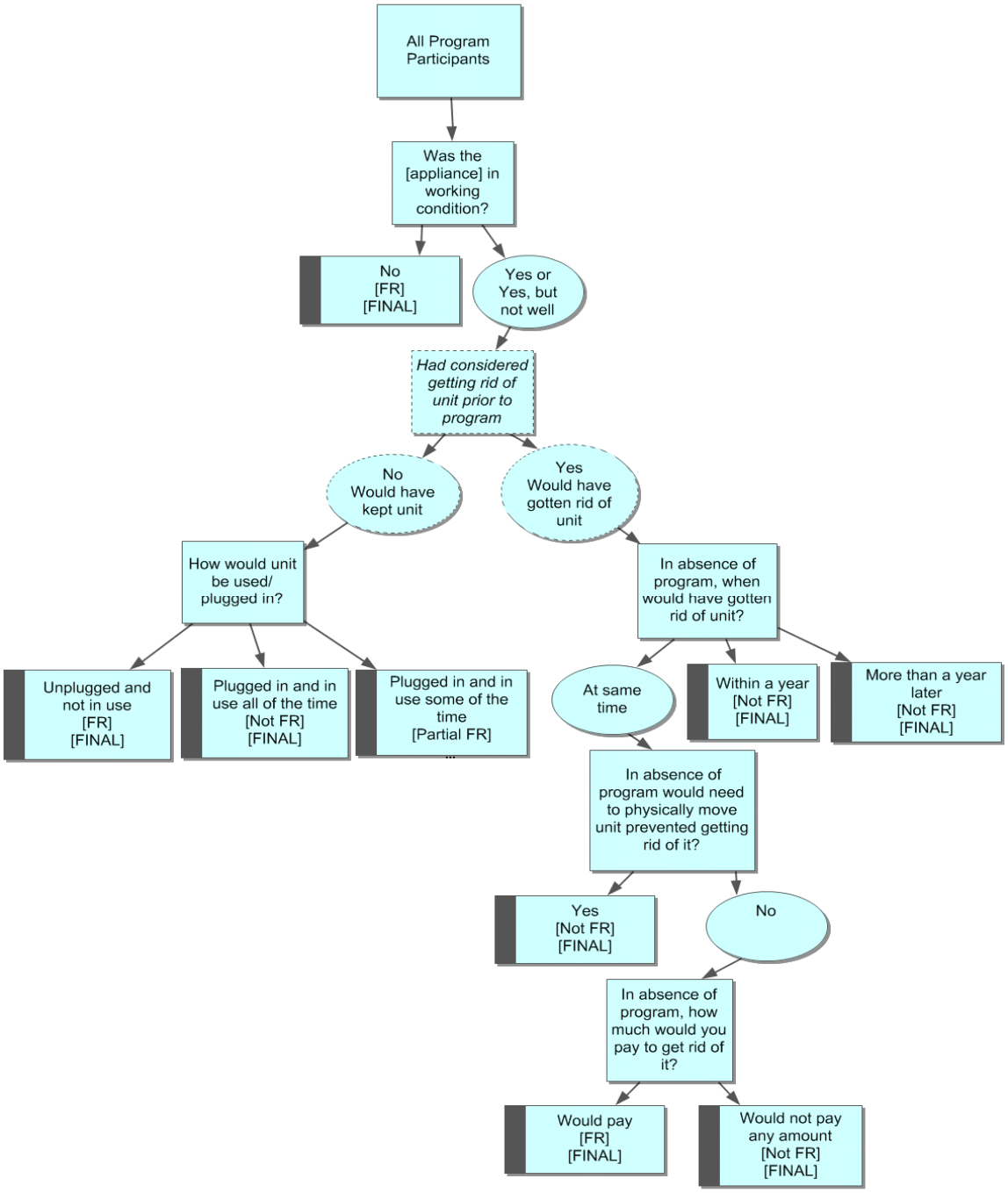


Figure F-2. Freeridership Pathways for Recycling, Appliance Rebate Program Area



Freeridership for Purchases

The program area required that appliance purchases were made *prior* to participants applying for the rebate, meaning that participants had to commit to the purchase with no guarantee that the rebate would be available to them. Therefore, traditional measures of freeridership that rely on participant reported action in the absence of the program area do not apply. However, the survey explored how the program area influenced the purchase decision.

The freeridership rate for purchases of each Option 1 appliance, and for the bundled appliances (Option 2), is shown in Table F-1. Among the Option 1 appliances, the freeridership rate is the highest for refrigerators (61%) and lowest for freezers (38%). The freeridership rate for bundled appliances is substantially lower than for the Option 1 appliances.

Table F-1. Freeridership Rates for Purchases, Appliance Rebate Program Area

	Option 1			Option 2
	Refrigerator (n=140)	**Freezer (n=140)**	**Clothes Washer (n=140)**	**Bundled Appliances (n=140)**
FR (freeriders)	61%	38%	47%	15%
NFR (non-freeriders)	37%	58%	50%	82%
Undetermined*	3%	4%	2%	4%

* A respondent's freeridership status is undetermined if no valid responses were given for any of the questions that determined freeridership status, or if their responses did not clearly determine their status.

Note: Columns may not sum to 100% due to rounding.

The determination of freeridership for purchases is based on participant *awareness* of the program area prior to making a purchase, and their *intention* to purchase the appliance in the absence of the program area. The likely timing of the purchase (sooner, at the same, later, or never) and whether the appliance model or efficiency level would have been the same in absence of the program area are also factors.

Table F-2 details the survey questions that lead to determining each individual respondent's freeridership status. The results show the breakdown of responses by the status of freeridership; they do not represent the total responses for each question and should not be interpreted in isolation. The percentages in each row reflect the proportion of respondents who were designated as a freerider (or non-freerider) because of their response to the question in that row; they do not simply reflect the proportion of respondents who gave a certain response.

Table F-2 also details the final freeridership status of respondents for the questions that were used to determine freeridership. Note that the freeridership determination is complex; some responses to questions allow a final determination of status, while other responses require clarification and comparison with responses to additional questions. The following text describes the freeridership decision logic, question by question.

The first row in the table shows the proportion of respondents who were designated as freeriders because they said they heard about the program area after they purchased the appliance(s), indicating that there was no program area influence in their purchase intention or action. (To be designated as a freerider for this reason, participants also had to say that they would have bought the same model in absence of the program area; if they said the program area caused them to buy a different model, then the program area clearly did influence their purchase.) Two percent of Option 2 participants, and between 2% and 7% of Option 1 participants (depending on appliance), were designated as freeriders based on this question. The freeridership status of respondents who learned about the rebate before their purchase, or who said they learned about it after the purchase but indicated that they were influenced to buy a different model, was determined by their responses to subsequent questions.

The second row shows the proportion of respondents who were designated as non-freeriders because they had not planned to buy an appliance before learning about the program area, indicating that the program area influenced their decision to make the purchase. Fifty-five percent of Option 2 respondents, and between 18% and 29% of Option 1 respondents (depending on appliance), were designated as non-freeriders for this reason. The freeridership status of those who said they *had* planned to make the

purchase before hearing about the program area, and who were not previously given a final freeridership status, was determined by responses to subsequent questions. The fact that more Option 2 respondents (those who purchased bundled appliances) were more likely than Option 1 respondents to be designated as a non-freerider because they had not planned to purchase the appliance(s) before learning about the rebate likely reflects the fact that Option 2 respondents were asked whether they had planned to buy all three appliances, instead of just one.

The third row in the table shows the proportion of respondents whose freeridership status was determined based on the likely timing of the purchase in absence of the rebate. Those who said the purchase would have been made within a year, more than a year later, or never (19% of Option 2 respondents and between 17% and 33% of Option 1 respondents) were designated as non-freeriders because the program area influenced the timing of their purchase. Those who said they would have made the purchase earlier or at the same time were determined to be freeriders, *unless* they also indicated in the following question that they would have purchased a different model without the rebate. At this point in the analysis, most of the respondents had been given a final freeridership status; the status of those who had not been designated was determined by their response to the next question.

The final question for freeridership designation asked respondents whether, in absence of the rebate, they would have purchased the same appliance model (see Row 4). A likely purchase of the same model implies that the efficiency level would have been the same, while a different model implies that the appliance may have been less efficient. Respondents who said they would have bought the same model in absence of the program area were designated as freeriders on this basis, because the program area did not influence their purchase decision. Twelve percent of Option 2 respondents and between 36% and 53% of Option 1 respondents were determined to be freeriders on this basis. Respondents who said they would have purchased a different model without the rebate were designated as non-freeriders because the program area influenced their purchase decision. Eight percent of Option 2 and between 2% and 5% of Option 1 respondents were determined to be non-freeriders on this basis.

The freeridership status of the remaining few respondents, who either did not give valid responses to any of the freeridership questions or whose responses did not allow for determination of their status, was undetermined. The Cadmus Team calculated a final NTG score by pro-rating the undetermined responses according to the ratio of FR and NFR.

Table F-2. Determination of Freeridership Status for Purchases, Appliance Rebate Program Area

Survey Question	Response	Refrigerators (Option 1)	Freezers (Option 1)	Clothes Washers (Option 1)	Bundled Purchase (Option 2)
When learn about rebate?	After purchase (FR if would have purchased same model(s))	7% (FR)	2% (FR)	5% (FR)	2% (FR)
Planned to buy appliance(s) before hearing about rebate?	No (Not FR)	18% (NFR)	23% (NFR)	29% (NFR)	55% (NFR)
If rebate not available, when would have made purchase?	Sooner or at same time (FR if would have purchased same model(s))	53% (FR)	36% (FR)	43% (FR)	12% (FR)
	Within a year, more than a year later, or would not have made purchase (Not FR)	17% (NFR)	33% (NFR)	17% (NFR)	19% (NFR)
Without rebate, would have bought same or different model(s)?	Different (Not FR)	2% (NFR)	3% (NFR)	5% (NFR)	8% (NFR)
	Total % FR/NFR/Undetermined*	61/37/3	38/58/4	47/50/2	15/82/4
	NTG Score **	0.38	0.60	0.51	0.85

Base is respondents who purchased appliances through the program area. The results in this table show the breakdown of responses by the status of freeridership; they do not represent the total responses for each question and should not be interpreted in isolation.

* A respondent's freeridership status is undetermined if they gave no valid responses to any of the questions that were used to determined freeridership status, or if their responses did not clearly determine their status.

** An NTG score is 1-FR, where undetermined freeridership status is applied proportionally to FR and NRF.

Note: Columns may not sum to 100% due to rounding.

Freeridership for Recycling Displaced Appliances

The program area also offered a rebate to participants who provided documentation showing that they recycled the displaced appliance when they purchased the new appliance. Energy savings from the new purchase is maximized when the older, displaced unit is removed from service in a permanent manner (recycled, trashed, or unplugged), as opposed to remaining in the home as a spare unit (mostly relevant for refrigerators and freezers) or being sold or given away. During the survey, respondents who recycled appliances through the program area were not asked to speculate about the likely outcome of those units (where would they likely be located, what would the likely usage patterns be, and if they would have been resold or sold as scrap). In the analysis, these appliances are treated as if respondents would have gotten rid of them in a permanent manner.

Recycling freeriders are defined as those who would have permanently taken the appliance out-of-service in absence of the program area. Note that there are non-energy benefits associated with recycling appliances (rather than sending them to a landfill), but those benefits are not calculated in this analysis.

As shown in Table F-3, the recycling freeridership rate is highest for clothes washers (32%) and lowest for refrigerators (20%). Recycling freeridership is 23% for freezers and 24% for dishwashers.

Table F-3. Freeridership Rates for Recycling, Appliance Rebate Program Area

Freeridership Satus	Refrigerators (n=111)	Freezers (n=29)	Clothes Washers (n=120)	Dishwashers (n=102)
Freeriders	20%	23%	32%	24%
Non-Freeriders	72%	58%	66%	72%
Partial Freeriders (50%)	3%	7%	2%	2%
Undetermined*	6%	13%	1%	2%

* A respondent's recycling freeridership status is undetermined if they did not give any valid responses for any of the survey questions that determined freeridership status, or if their responses did not clearly determine their status.

Note: Columns may not sum to 100% due to rounding.

Note: The base for each appliance is the number of respondents who recycled that appliance.

Table F-4 details the survey questions that allowed the Cadmus Team to determine an individual respondent's recycling freeridership status. The percentages in the table represent the proportion of respondents who were designated as a freerider (or as a non-freerider) because of their response to the questions in each row.

The question in the first row assessed whether the appliances were in working order when respondents decided to recycle them through the program area. Respondents who said that the appliance was not working were designated as freeriders (this was between 4% and 21% depending on appliance type). The freeridership status of those who said their appliance was working, or was not working well, was assigned on the basis of subsequent questions.

The second and third rows show freeridership designations based on what respondents would have done with the appliance absent the program area. Respondents indicated whether they would have kept the appliance or gotten rid of it (this question is shown in Figure F-2, but is not shown in Table F-4 because the results do not directly lead to a freeridership designation). Follow-up questions were asked to determine how often they would have kept the appliance plugged in (if they said they would have kept it) and how soon they would have gotten rid of it (if they said they would have had it removed).

As shown in the second row of the table, respondents who said they would have kept the appliance plugged in all of the time were designated as non-freeriders, because the program area prevented the unit from being used. Between 8% and 25% of respondents were designated on this basis. Those who would have kept it plugged in *some* of the time were designated as partial freeriders; this affected between 2% and 7% of respondents. Between 0% and 7% of respondents were designated as freeriders because they said they would have kept the appliance unplugged and not in use, indicating that the program area had no influence on whether the appliance was using electricity.

The third row shows the freeridership status of respondents who would have gotten rid of the appliance in absence of the program area. Freeridership was assigned based on *when* respondents would have had the appliance removed. Those who would have removed it within one year or more than one year later were designated as non-freeriders, because the program area caused the appliance to be taken out of service earlier than it would have been without the program area; this affected between 9% and 26% of respondents. Respondents who would have gotten rid of the appliance at the same time or earlier in absence of the program area were assigned freeridership status based on their responses to later questions.

The fourth and fifth rows of the table show the proportion of respondents who were assigned freeridership status based on their responses to questions about the likely barriers to getting rid of a large appliance: the need to physically move the unit and the need to have to pay someone to remove it. Note that only

respondents who would have gotten rid of the appliance at the same time without the program area were asked about these barriers.

The fourth row of the table shows the proportion of respondents designated as non-freeriders because the need to physically move the unit would have prevented them from getting rid of it (between 7% and 11% of respondents), thus indicating that the program area removed a physical barrier.

The fifth row shows the freeridership status of respondents based on how much, if anything, they would have paid to get rid of the unit in absence of the program area. Those who said they would have paid some amount of money to have the appliance removed (between 8% and 12% of all respondents) were designated as freeriders, whereas those who would not have paid anything to have it removed (between 14% and 34% of respondents) were designated as non-freeriders, because the program area removed a financial barrier.

Respondents whose freeridership status was not assigned on the basis of any of the questions in the table were ultimately designated as undetermined.

The Cadmus Team calculated a final NTG score by pro-rating the undetermined responses according to the ratio of freeridership, partial freeridership, and no freeridership. Each partial freerider in the calculation is equal to 0.5 freerider.

Table F-4. Determination of Freeridership for Recycling, Appliance Rebate Program Area

Survey Question	Response	Refrigerator	Freezer	Clothes Washer	Dishwasher
Working condition of recycled appliance	Not working (FR)	4% (FR)	8% (FR)	21% (FR)	13% (FR)
(If working and said would have kept without program area) how often would have plugged it in	All of the time (NFR)	23% (NFR)	8% (NFR)	18% (NFR)	25% (NFR)
	Some of the time (PFR)	3% (PFR)	7% (PFR)	2% (PFR)	2% (PFR)
	None of the time (FR)	4% (FR)	7% (FR)	3% (FR)	0% (FR)
If rebate not available, when would have gotten rid of it	Within a year or more than a year later (NFR)	19% (NFR)	9% (NFR)	26% (NFR)	21% (NFR)
Would the need to physically move appliance have prevented from getting rid of it	Yes (NFR)	11% (NFR)	7% (NFR)	8% (NFR)	8% (NFR)
Would pay something to have it removed	Yes (FR)	12% (FR)	8% (FR)	8% (FR)	11% (FR)
	No (NFR)	19% (NFR)	34% (NFR)	14% (NFR)	18% (NFR)
Total % FR/NFR/PFR/Undetermined*	N/A	20/72/3/6	23/58/7/13	32/66/2/1	24/72/2/2
NTG Score**	N/A	0.78	0.71	0.68	0.75

Base is respondents who recycled appliances through the program area.

* A respondent's recycling freeridership status is undetermined if they did not give any valid responses for any of the survey questions that determined freeridership status, or if their responses did not clearly determine their status.

** The NTG score is 1-FR, where undetermined freeridership status is applied proportionally to FR and NRF, and PFR = 0.5 FR.

F2. ENERGY-EFFICIENCY PROGRAM AREA

Following an algorithm previously developed by NYSERDA and modified for the Energy-Efficiency Program Area, the Cadmus Team estimated energy-efficiency projects' freeridership through several sets of questions: direct freeridership questions (FR6A and FR6B), program area influence freeridership questions (FR2, FR4, and FR5), program area influence questions based on the impacts of lost or diverted funding (E6), and questions about diverting funds to other projects after securing NYSERDA ARRA funds (AF8). Finally, the Cadmus Team weighted freeridership by the energy savings for each participant. In summary, estimating freeridership involves five steps, the first four of which are outlined below:

1. Determining direct freeridership
2. Calculating the program area influence score
3. Adjusting direct freeridership based on the program area influence score[1]
4. Weighting by the energy savings

The Cadmus Team also developed two alternative estimates of freeridership. In these, NYSERDA is credited with savings proportionate to its contribution to the overall funding for the project, according to a directive from the DOE.[2] The directive to allocate program area effects in proportion to the amount of the project funded through ARRA recognizes that many projects receive funds from multiple sources, including ARRA, other funding agencies, or their own operating budgets. Each of these entities has a legitimate claim on the energy saved, jobs created, and greenhouse gases reduced. To avoid double counting, the DOE concluded that the best approach is to have ARRA-funded programs claim program area effects only in proportion to the savings. The first alternative estimate adjusts the savings by the percentage of the project that respondents said was paid for by NYSERDA. The second alternative estimate uses data from the program tracking database (specifically column L divided by column K in the spreadsheet *ARRA Project Status Update – Program Eval* dated December 10, 2011). Thus, the fifth step in estimating freeridership involved:

5. Adjusting freeridership by the percent of the project funded by NYSERDA ARRA

Note that the tables in this appendix present data and calculations based on a *subset* of six respondents, and are shown as examples only. Please see the main document for calculations based on all 51 respondents.

Direct Freeridership

The Cadmus Team estimated direct freeridership by responses to either FR6A (percentage likelihood to install same measure) or FR6B (percentage of energy-efficiency measure that would have been installed without ARRA funds), or by taking the average of them both, depending on the nature of the project. This is illustrated in Table F-5 using a subset of data from actual respondents.

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[1] The Cadmus Team compared the program area influence score to the direct freeridership score in order to examine the consistency of respondents' assessments of the program area's influence. NYSERDA's Market Characterization, Assessment, and Causality (MCAC) evaluation team had previously assigned a range of reasonable freeridership values for each program area influence score. For example, a maximum program area influence score of 5 is assumed to have a lower bound of 0% freeridership and an upper bound of 25% freeridership, with the assumption that a freeridership value higher than 25% would be inconsistent with the maximum program area influence score. For more details, see: Summit Blue. *Commercial/Industrial Performance Program Market Characterization, Market Assessment and Causality Evaluation*. 2007.

[2] United States Department of Energy. *DOE Recovery Act Reporting Requirements for the State Energy Program.* Effective date: March 1, 2010.

Table F-5. Direct Freeridership for Energy-Efficiency Program Area

Respondent	FR6A: Percentage Likelihood to Install Same Measure	FR6B: Percent of Measures Installed Without ARRA Funds (kW)	Direct FR (FR6A, FR6B, or average of both)
a	0%	N/A	0%
b	75%	N/A	75%
c	100%	100%	100%
d	40%	50%	45%
e	N/A	0%	0%
f	N/A	25%	25%

Program Area Influence Score

The Cadmus Team estimated the program area influence score by calculating the average score of FR2,[3] FR4, FR5, and, if applicable, E6 (likelihood of completing the project if NYSERDA ARRA funds had not replaced funding lost or turned down from another source), and AF8[4] (likelihood of diverting funds to other renewable or energy-efficiency projects if NYSERDA ARRA funds had not been available for the completed project). This is illustrated in Table F-6, again using examples from actual respondents.

Table F-6. Energy-Efficiency Program Area Influence Score

Resp.	FR2	FR2, Reverse Scored	FR2, Reversed, Adjusted to 5-point Scale	FR4	FR5	E6 (lost or turned down funding)	AF8 (diverted funding)	AF8, Reverse Scored	Program Area Influence Score (average of FR2, FR4, FR5, E6, and AF8)
a	6	1	0.8	2	3	N/A	1	5	2.7
b	6	1	0.8	2	2	N/A	N/A	N/A	1.6
c	6	6	0.8	N/A	3	N/A	N/A	N/A	1.9
d	5	2	1.7	2	2	N/A	3	3	2.2
e	5	2	1.7	5	2	N/A	N/A	N/A	2.9
f	N/A	N/A	N/A	4	2	N/A	N/A	N/A	3.0

[3] FR2 was reverse scored such that the response indicating the greatest influence of NYSERDA ARRA funding on the project also received the highest score, and the answers were adjusted to a 5-point scale by multiplying the outcome by 5/6.

[4] AF8 was reverse scored such that the response indicating the greatest influence of NYSERDA ARRA funding on the project also received the highest score.

The program area influence score is associated with lower and upper bounds of freeridership, as defined by the FlexTech algorithm (Table F-7).[5]

Table F-7. Energy-Efficiency Program Area Influence Scores and Corresponding Lower and Upper Bounds of Freeridership

Average Program Area Influence Score	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
Lower Bound Freeridership Value	75%	70%	60%	50%	40%	30%	25%	20%	10%	0%	0%	0%	0%
Upper Bound Freeridership Value	100%	100%	100%	100%	90%	80%	75%	70%	60%	50%	40%	30%	25%

Next, direct freeridership scores are compared to the lower and upper bounds of freeridership, as determined by the program area influence score (Table F-8). The Cadmus Team rounded the program area influence score to the closet influence score listed on the upper and lower bounds (Table F-7); for example, a 1.9 was treated as a 2.0. Wherever the direct freeridership score fell outside the bounds of the program area influence score, the direct freeridership score was changed to either the lower or upper bound value, whichever was closest. The freeridership rate calculated in this appendix applies only to these six example projects and not all 51 projects described in the full body of the report. The freeridership rate for the full sample of 51 respondents was 27% before adjusting for the percent of the project funded by NYSERDA, and is 28% after applying the adjustment.

[5] The Cadmus Team compared the program area influence score to the direct freeridership score in order to examine the consistency of respondents' assessments of the program area's influence. NYSERDA's MCAC evaluation team had previously assigned a range of reasonable freeridership values for each program area influence score. For example, a maximum program area influence score of 5 is assumed to have a lower bound of 0% freeridership and an upper bound of 25% freeridership, with the assumption that a freeridership value higher than 25% would be inconsistent with the maximum program area influence score. For more details, see: Summit Blue. *Commercial/Industrial Performance Program Market Characterization, Market Assessment, and Causality Evaluation*. 2007.

Table F-8. Compared Direct Freeridership to Upper and Lower Bounds of Freeridership, Determined by Energy-Efficiency Program Area Influence Score

Resp.	Direct FR	Lower Bound of FR	Upper Bound of FR	FR Score	Gross Energy Savings (MMBtu)	Percent of Project Funded by NYSERDA ARRA	NYSERDA ARRA Gross Savings (MMBtu)	Freeridership Savings (MMBtu)
a	0%	30%	80%	30%	487	100%	487	146
b	75%	60%	100%	75%	3,765	53%	1995	1,497
c	100%	50%	100%	100%	4,279	10%	428	428
d	45%	40%	90%	45%	159	50%	80	36
e	0%	25%	75%	25%	1238	89%	1,102	275
f	25%	25%	75%	25%	3,465*	50%	1,732	433
Total Savings							**5,824**	**2,815**
Savings Weighted Overall FR (Freeridership savings / NYSERDA ARRA gross savings)							**48%**	

* This number was assumed, based on known savings from 18 surveys that positively tie to specific projects. See the full body of the report for more details.

F3. RENEWABLE ENERGY PROGRAM AREA

PON 1613 Freeridership Calculations

Following an algorithm previously developed by NYSERDA and modified for the Renewable Energy program area, the Cadmus Team estimated freeridership through several sets of questions: direct freeridership questions (FR5 and FR6),[6] program area influence freeridership questions (FR2, FR3, and FR4), program area influence questions based on the impacts of lost funding (E8), questions based on turning down other funds after securing NYSERDA ARRA funds (AF8), and questions about diverting funds to other projects after securing NYSERDA ARRA funds (AF10). In addition, NYSERDA is credited with savings proportionate to its contribution to the overall funding for the project, according to a directive from the DOE.[7] This directive recognizes that many projects receive funds from multiple sources: ARRA, other funding agencies, their own operating budgets, etc. Each of these entities has a legitimate claim on the energy saved, jobs created, and greenhouse gases reduced. To avoid double-counting savings, the DOE concluded that ARRA-funded programs can claim program effects only in

[6] See Appendix E to view the actual survey questions.

[7] United States Department of Energy. *DOE Recovery Act Reporting Requirements for the State Energy Program (SEP).* Effective date: March 1, 2010.

proportion to the savings.[8] The Cadmus Team weighted freeridership by the energy savings for each participant. In summary, estimating freeridership involves five steps:

1. Determining direct freeridership
2. Calculating a program area influence score
3. Adjusting direct freeridership based on the program area influence score[9]
4. Adjusting freeridership by the percent of the project funded by NYSERDA ARRA
5. Weighting by the energy savings

Direct Freeridership

Direct freeridership (FR) is estimated by calculating the average response to question FR5 (percent likelihood to install same system) and to question FR6 (capacity of system that would have been installed without ARRA funds). This is illustrated in Table F-9 using a subset of data from actual respondents.

Table F-9. Direct Freeridership, Renewable Energy Program Area

Respondent	Capacity (kW)	FR5: Percent likelihood to install same system	FR6: Capacity of system that would have been installed without ARRA funds (kW)	FR6: (Capacity would have installed) / capacity installed	Direct FR (Avg. FR5 and FR6)
a	47 kW	10%	7	15%	12%
b	49 kW	0%	0	0%	0%
c	49 kW	1%	5	10%	6%
d	48 kW	0%	0	0%	0%
e	32 kW	0%	0	0%	0%
f	48 kW	0%	0	0%	0%
g	11 kW	10%	12	110%	60%

[8] This consideration of the attribution of effects with multiple funding sources and influences is likely to become increasingly important in the energy-efficiency community, where multiple entities have set goals and made commitments to reduce energy use and greenhouse gas emissions. For example, if a public university must follow state-mandated goals to reduce energy use, and installs a high-efficiency boiler in the biology building, the university will want to claim those savings even if an energy-efficiency program area paid for a portion of the project. Both the university and the efficiency program area administrators need to demonstrate progress to the state on reducing their energy use and greenhouse gas emissions. Some people in the energy-efficiency community have concluded that the fairest way to avoid double counting is to stop allowing program area administrators to claim all the savings from a project, and instead only allow them to claim the portion they actually funded. The university and program area would each claim a portion of the savings, thereby both showing the state progress toward their goals, rather than double counting the savings or having only one of the two entities claim savings.

[9] The Cadmus Team compared the program area influence score to the direct freeridership score in order to examine the consistency of respondents' assessments of the program area's influence. NYSERDA's MCAC evaluation team had previously assigned a range of reasonable freeridership values for each program area influence score. For example, a maximum program area influence score of five is assumed to have a lower bound of 0% freeridership and an upper bound of 25% freeridership, with the assumption that a freeridership value higher than 25% would be inconsistent with the maximum program area influence score. For more details, see: Summit Blue. *Commercial/Industrial Performance Program (CIPP) Market Characterization, Market Assessment and Causality Evaluation*. 2007.

Program Area Influence Score

The Cadmus Team estimated the program area influence score by calculating the average score of FR2,[10] FR3, FR4, and, if applicable, E8 (the likelihood of completing the project if NYSERDA ARRA funds had not replaced funding that was lost from another source), AF8 (the likelihood of completing the project for which the respondent had declined funds if the NYSERDA ARRA funds were not available), and AF10 (the likelihood of diverting funds to other renewable or energy-efficiency projects if NYSERDA ARRA funds had not been available for the completed project). This is illustrated in Table F-10, again using examples from actual respondents.

Table F-10. Renewable Energy Program Area Influence Score

Resp.	FR2	FR2, reverse scored	FR2, reversed, adjusted to 5-point scale	FR3	FR4	E8 (lost funding)	AF8 (turned down funding)	AF10 (diverted funding)	AF10, reverse scored	Program Area Influence Score
a	2	5.0	4.2	4	5	N/A	N/A	N/A	N/A	4.4
b	N/A	N/A	N/A	4	5	N/A	N/A	N/A	N/A	4.5
c	2	5.0	4.2	4	5	N/A	N/A	N/A	N/A	4.4
d	N/A	N/A	N/A	5	5	N/A	N/A	N/A	N/A	5.0
e	N/A	N/A	N/A	5	5	N/A	N/A	1	5	5.0
f	N/A	N/A	N/A	5	5	N/A	N/A	1	5	5.0
g	2	5.0	4.2	4	4	N/A	N/A	N/A	N/A	4.1

* This is the average of FR2, FR3, FR4, E8, AF8, and AF10.

The program area influence score is associated with lower and upper bounds of freeridership, as defined by the FlexTech algorithm (Table F-11).[11]

[10] FR2 was reverse scored such that the response indicating the greatest influence of NYSERDA ARRA funding on the project also receives the highest score. The answers were then adjusted to a 5-point scale by multiplying the outcome by 5/6.

[11] The Cadmus Team compared the program area influence score to the direct freeridership score in order to examine the consistency of respondents' assessments of the program area's influence. NYSERDA's MCAC evaluation team had previously assigned a range of reasonable freeridership values for each program area influence score. For example, a maximum program area influence score of five is assumed to have a lower bound of 0% freeridership and an upper bound of 25% freeridership, with the assumption that a freeridership value higher than 25% would be inconsistent with the maximum program area influence score. For more details, see: Summit Blue. *Commercial/Industrial Performance Program (CIPP) Market Characterization, Market Assessment and Causality Evaluation*. 2007.

Table F-11. Renewable Energy Program Area Influence Scores and Corresponding Lower and Upper Bounds of Freeridership

Average Program Area Influence Score	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
Lower Bound Freeridership Value	75%	70%	60%	50%	40%	30%	25%	20%	10%	0%	0%	0%	0%
Upper Bound Freeridership Value	100%	100%	100%	100%	90%	80%	75%	70%	60%	50%	40%	30%	25%

Adjusting Freeridership Per the Influence Score

Next, the Cadmus Team compared the direct freeridership scores to the lower and upper bounds of freeridership, as determined by the program area influence score (Table F-12). Wherever the direct freeridership fell outside the bounds of the program area influence score, the direct freeridership score was changed to either the lower or upper bound value, whichever was closest. The Cadmus Team then estimated the overall savings-weighted freeridership value by first calculating the NYSERDA ARRA gross savings. This was done by multiplying the gross energy savings by the percent of the project funded with NYSERDA ARRA funds, then applying freeridership rates to the savings, summing the freeridership savings across all the projects, and dividing this number by the sum of anticipated savings attributable to NYSERDA. The final calculated freeridership rate applies only to the seven projects used as an example for this appendix, and not all 44 projects described in the full body of the report. The savings-weighted freeridership rate for the full sample was 4%.

Table F-12. Compare Direct Freeridership to Upper and Lower Bounds of Freeridership, Determined by Renewable Energy Program Area Influence Score

Resp.	Direct FR	Lower Bound of FR (Prog. Infl)	Upper bound of FR (Prog. Infl)	FR Score	Gross Energy Savings (MMBtu)	Percent of Project Funded by NYSERDA ARRA	NYSERDA ARRA Gross Savings (MMBtu)	Freeridership Savings (MMBtu savings)
a	12%	0%	40%	12%	180.72	100%	180.7	21.7
b	0%	0%	35%	0%	211.04	90%	189.9	0.0
c	6%	0%	40%	6%	194.12	100%	194.1	11.6
d	0%	0%	25%	0%	172.99	80%	138.4	0.0
e	0%	0%	25%	0%	111.62	100%	111.6	0.0
f	0%	0%	25%	0%	207.40	91%	188.7	0.0
g	60%	0%	50%	50%	45.96	100%	46.0	23.0
Total Savings							**1,049.5**	**56.3**
Savings-Weighted Overall FR (Freeridership Savings / NYSERDA ARRA Gross Savings)							**5%**	

F4. TRANSPORTATION PROGRAM AREA

A NTG analysis is not included for the Transportation Program Area because individual survey responses could not be shared anonymously due to small sample size.

F5. ENERGY CONSERVATION STUDIES PROGRAM AREA

Following an algorithm previously developed by NYSERDA and modified for the Energy Conservation Studies Program Area, the Cadmus Team estimated freeridership for the energy-efficiency projects through several sets of questions: direct freeridership questions (FR5 and FR7)[12], program area influence freeridership questions (FR2, FR3, and FR4), program area influence questions based on the impacts of lost or diverted funding (E3), and questions based on diverting funds to other projects after securing NYSERDA ARRA funds (AF4). Finally, freeridership was weighted by the energy savings for each participant. In summary, estimating freeridership involves four steps:

1. Determining direct freeridership
2. Calculating a program area influence score
3. Adjusting direct freeridership based on the program area influence score[13]
4. Weighting by the energy savings

Direct Freeridership

Direct freeridership is estimated by taking the average of the responses to question FR5 (percent likelihood to install same measure) and best estimates to question FR7 (percent of energy savings that would have been achieved without ARRA funds). This is illustrated in Table F-13 using a subset of data from actual respondents.

Table F-13. Direct Freeridership for Energy Conservation Studies Program Area

Respondent	FR5: Percent likelihood to install same measure	FR7: Percent of energy savings that would have been achieved anyway (best estimate)	Direct FR (Average of FR5 and FR7)
a	60%	50%	55%
b	60%	40%	50%
c	100%	100%	100%
d	0%	0%	0%

[12] See Appendix E to view the actual survey questions.

[13] The Cadmus Team compared the program area influence score to the direct freeridership score in order to examine the consistency of respondents' assessments of the program area's influence. NYSERDA's MCAC evaluation team had previously assigned a range of reasonable freeridership values for each program area influence score. For example, a maximum program area influence score of five is assumed to have a lower bound of 0% freeridership and an upper bound of 25% freeridership, with the assumption that a freeridership value higher than 25% would be inconsistent with the maximum program area influence score. For more details, see: Summit Blue. *Commercial/Industrial Performance Program (CIPP) Market Characterization, Market Assessment and Causality Evaluation*. 2007.

Program Area Influence Score

The Cadmus Team estimated the program area influence score by calculating the average score of FR2,[14] FR3, FR4, and, if applicable, E8 (the likelihood of completing the project if NYSERDA ARRA funds had not replaced funding that was lost or turned down from another source; this question was screened by question E3), and AF5[15] (the likelihood of diverting funds to other renewable or energy-efficiency projects if NYSERDA ARRA funds had not been available for the completed project; this question was screened by question AF4, as illustrated in Table F-14, again using examples from actual respondents).

Table F-14. Energy Conservation Studies Program Area Influence Score

Resp.	FR2	FR2, reverse scored	FR2, reversed, adjusted to 5-point scale	FR3	FR4	E8 (lost or turned down funding)	AF5 (diverted funding)	AF5, reverse scored	Program Area Influence Score
a	3	4	3.3	2	5	N/A	2	4	3.6
b	3	4	3.3	2	5	N/A	2	4	3.6
c	5	2	1.7	2	2	N/A	N/A	N/A	1.9
d	5	2	1.7	3	5	N/A	N/A	N/A	3.2

* This is the average of FR2, FR4, FR5, E6, and AF8.

The program area influence score is associated with lower and upper bounds of freeridership, as defined by the FlexTech algorithm (Table F-15).[16]

[14] FR2 was reverse scored such that the response indicating the greatest influence of NYSERDA ARRA funding on the project also receives the highest score. The answers were then adjusted to a 5-point scale by multiplying the outcome by 5/6.

[15] AF5 was reverse scored such that the response indicating the greatest influence of NYSERDA ARRA funding on the project also receives the highest score.

[16] The Cadmus Team compared the program area influence score to the direct freeridership score in order to examine the consistency of respondents' assessments of the program area's influence. NYSERDA's MCAC evaluation team had previously assigned a range of reasonable freeridership values for each program area influence score. For example, a maximum program area influence score of five is assumed to have a lower bound of 0% freeridership and an upper bound of 25% freeridership, with the assumption that a freeridership value higher than 25% would be inconsistent with the maximum program area influence score. For more details, see: Summit Blue. *Commercial/Industrial Performance Program (CIPP) Market Characterization, Market Assessment and Causality Evaluation*. 2007.

Table F-15. Energy Conservation Studies Program Area Influence Scores and Corresponding Lower and Upper Bounds of Freeridership

Average Program Area Influence Score	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
Lower Bound Freeridership Value	75%	70%	60%	50%	40%	30%	25%	20%	10%	0%	0%	0%	0%
Upper Bound Freeridership Value	100%	100%	100%	100%	90%	80%	75%	70%	60%	50%	40%	30%	25%

Next, the Cadmus Team compared the direct freeridership scores to the lower and upper bounds of freeridership, as determined by the program area influence score (Table F-16). The Cadmus Team rounded the program area influence score to the closet influence score listed as the upper and lower bounds (Table F-15); for example, 1.9 was treated as 2.00. Wherever the direct freeridership fell outside the bounds of the program area influence score, the direct freeridership score was changed to either the lower or upper bound value, whichever was closest. The final calculated freeridership rate applies only to four projects used as an example for this appendix, and not to all 31 projects described in the full body of the report. The savings-weighted freeridership rate for the full sample was 55%.

Table F-16. Compare Direct Freeridership to Upper and Lower Bounds of Freeridership, Determined by Energy Conservation Studies Program Area Influence Score

Resp.	Direct FR	Lower Bound of FR (Prog. Infl)	Upper Bound of FR (Prog. Infl)	FR Score	Installed Savings (MMBtu)	Reduction in Savings to FR (MMBtu)
a	55%	10%	60%	55%	0	0
b	50%	10%	60%	50%	0	0
c	100%	50%	100%	100%	102,040	102,040
d	0%	20%	70%	20%	67,868	13,574
Overall FR						**68%**

Appendix G:

SURVEY PROCESS RESULTS

G1. APPLIANCE REBATE PROGRAM AREA

Using a scale of 1 (very difficult) to 5 (very easy), respondents were asked to rate their experience with completing various steps of the application process (Table G-1 through Table G-8). Regardless of how they applied—whether over the phone, online, in writing, or using more than one method—respondents rated the process as relatively easy, with overall ratings above 4 for each of the application methods.

As Table G-1 shows, among those who completed the application over the phone, nearly three-quarters (74%) said it was "very easy." The single respondent who had a specific difficulty with their application over the phone said that they had been put on hold for a long time.

Nearly two-thirds (59%) of online applicants rated the process as "very easy;" those who indicated they had difficulty said the Website wouldn't allow them to make changes or blocked their application, that the Website was confusing, and that the respondents didn't know details about the appliance description needed on the application.

Fifty-seven percent (57%) said that completing the initial application in writing was "very easy." The single respondent who elaborated on the difficulty said that they did not have the proof of purchase/receipt number for the appliance.

Among the few respondents who used more than one method for completing the initial application, 59% said it was "very easy," but one-quarter (25%) said the process was "somewhat" or "very" difficult. Specific issues mentioned were technical difficulties with the phone system and that the Website was confusing.

Table G-1. Ease of Completing Initial Application by Method, Appliance Rebate Program Area

Level of Difficulty (Scale 1 to 5)	Overall	Upstate	Downstate
Over the Phone			
Sample Size	*46*	*19*	*27*
Average (Scale 1 to 5)	4.4	4.3	4.6
1 Very difficult	2%	0%	4%
2 Somewhat difficult	12%	16%	7%
3 Neither	3%	5%*	0%
4 Somewhat easy	9%	11%	7%
5 Very easy	74%	68%	82%
Don't know/refused	0%	0%	0%
Online			
Sample size	*217*	*119*	*98*
Average (Scale 1 to 5)	4.4	4.5	4.2
1 Very difficult	2%	2%	2%
2 Somewhat difficult	5%	3%*	10%
3 Neither	5%	3%*	13%
4 Somewhat easy	28%	30%	22%
5 Very easy	59%	62%	54%
Don't know/refused	<1%	0%	<1%

Level of Difficulty (Scale 1 to 5)	Overall	Upstate	Downstate
In Writing			
Sample size	*175*	*77*	*98*
Average (Scale 1 to 5)	4.5	4.5	4.4
1 Very difficult	1%	1%	0%
2 Somewhat difficult	4%	4%	3%
3 Neither	5%	5%	5%
4 Somewhat easy	32%	36%	26%
5 Very easy	57%	53%	65%
Don't know/refused	<1%	0%	<1%
More Than One Method			
Sample size	*32*	*16*	*16*
Average (Scale 1 to 5)	4.0	4.1	3.7
1 Very difficult	6%	6%	7%
2 Somewhat difficult	19%	19%	20%
3 Neither	2%	0%*	7%
4 Somewhat easy	12%	6%*	27%
5 Very easy	59%	69%*	40%
Don't know/refused	1%	1%	0%

* Although some differences between Upstate and Downstate respondents are large, these differences are not statistically significant between Upstate and Downstate at the 90% confidence level unless noted by *.

Note: Base for each method is respondents who used that method to apply for the Program Area rebate.

The Program Area required that all applicants submit original receipts showing the make, model, price, and date of purchase for the qualifying appliance(s). If the replaced appliance was recycled, applicants were also required to submit a proof-of-recycling receipt with the make and model of the replaced appliance or the confirmation number from the NYC 311 hotline (if the applicant was a NYC resident who recycled a refrigerator or freezer).

Respondents in the survey were asked to rate the ease of providing proof of compliance. As Table G-2 shows, the mean ratings for the ease of providing proof of purchase and proof of recycling were 4.6. The few respondents who expressed difficulty with providing proof of purchase said that they had sent in the wrong receipt, lost the receipt, or had problems copying the receipt. Respondents who expressed difficulty with providing proof of recycling said that they didn't know the appliance details, didn't have a receipt number, or had difficulties communicating with the Program Area staff due to problems with the phone system or confusion with the Website.

Table G-2. Ease of Providing Proof of Compliance, Appliance Rebate Program Area

	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Providing Proof of Purchase			
Average (Scale 1 to 5)	4.6	4.6	4.6

	Overall	Upstate	Downstate
1 Very difficult	1%	1%	1%
2 Somewhat difficult	3%	3%	3%
3 Neither	3%	3%	4%
4 Somewhat easy	17%	18%	16%
5 Very easy	74%	74%	76%
Don't know/refused	2%	2%	1%
Providing Proof of Recycling			
Average (Scale 1 to 5)	4.5	4.5	4.4
1 Very difficult	1%	1%	2%
2 Somewhat difficult	3%	3%	5%
3 Neither	8%	9%	5%
4 Somewhat easy	18%	17%	21%
5 Very easy	64%	65%	61%
Don't know/refused	5%	5%	6%

Due to the high customer response and limited funding, NYSERDA stopped accepting Program Area applications in July 2010 and started a waiting list. By October 2010, they reopened the Program Area to wait-listed customers after it became clear that previously committed funds would not be used: 34% of the original applications did not satisfy all the Program Area requirements and were rejected.

As Table G-3 shows, 14% of respondents had been wait-listed prior to receiving the rebate, with a significantly different proportion Upstate (12%) compared to Downstate (18%).[1]

Table G-3. Waiting List for Application, Appliance Rebate Program Area

Put on Waiting List	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Yes	14%	12%*	18%
No	76%	80%*	68%
Don't know/refused	10%	8%*	14%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Overall, over one-half (52%) of wait-listed respondents did not know they were on the wait list (Table G-4). Fewer than one-third (29%) of wait-listed respondents said that they were aware they would be wait-listed prior to purchasing the appliance, with no guarantee that the rebate money would become available, with a significantly different proportion Upstate (35%) compared to Downstate (21%).

[1] The wait-listed portion of survey respondents is higher than the overall database analysis suggests, which was 9% for refrigerators and lower for all other measures.

Table G-4. Aware of Being Wait-Listed Prior to Purchase, Appliance Rebate Program Area

Awareness	Overall	Upstate	Downstate
Sample size	*138*	*54*	*84*
Yes	29%	35%*	21%
No	52%	46%	60%
Don't know/refused	19%	19%	19%

Note: Base is respondents on waiting list.

Note: Although some differences between Upstate and Downstate are large, differences are not statistically significant at the 90% confidence level unless noted by *.

Wait-listed applicants reported that completing the application process was easy; using a scale of 1 (very difficult) to 5 (very easy), the average rating was 4.0 (Table G-5).

Table G-5. Ease of Completing Application After Being Wait-Listed, Appliance Rebate Program Area

Level of Difficulty (Scale 1 to 5)	Overall	Upstate	Downstate
Sample size	*83*	*33*	*50*
Average (Scale 1 to 5)	4.0	4.1	3.9
1 Very difficult	3%	3%	4%
2 Somewhat difficult	10%	12%	8%
3 Neither	15%	12%	20%
4 Somewhat easy	21%	18%	26%
5 Very easy	48%	52%	42%
Don't know/refused	2%	3%	0%

Note: Although some differences between Upstate and Downstate are large, differences are not statistically at the 90% confidence level unless noted by *.

Note: Base is respondents who were wait-listed for the rebate prior to purchase.

Half of the respondents received the Program Area rebate check within six weeks of completing the entire application process (Table G-6).

Table G-6. Timing of Rebate Check, Appliance Rebate Program Area

Timing	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Less than 4 weeks	12%	14%*	7%
Between 4 and 6 weeks	38%	40%*	34%
Between 7 and 8 weeks	16%	15%	18%
More than 8 weeks	14%	13%*	18%
Have not received rebate check yet	<1%	0%	1%
Don't know/refused	20%	19%	22%

* Although some differences between Upstate and Downstate are large, differences are not statistically significant at the 90% confidence level unless noted by *.

The majority of respondents (80%) said the application process was "somewhat easy" or "very easy" (Table G-7).

Table G-7. Overall Ease of Participating in Appliance Rebate Program Area

Level of Difficulty (Scale 1 to 5)	Overall	Upstate	Downstate
Sample size	*402*	*184*	*218*
Average (Scale 1 to 5)	3.7	3.6	3.7
1 Very difficult	1%	1%	1%
2 Somewhat difficult	7%	7%	7%
3 Neither	11%	10%	13%
4 Somewhat easy	29%	30%	28%
5 Very easy	51%	52%	50%
Don't know/refused	1%	1%	1%

Note: This question was added to the survey after fielding had started. Therefore, the base is the subset or respondents who completed the survey after the question was added.

The few respondents who expressed difficulty said that they were confused over which appliances qualified and the Program Area requirements, felt that the Program Area requirements were burdensome or too strict, experienced technical difficulties online, felt that the process took too long, or were frustrated by being wait-listed (Table G-8).

Table G-8. Difficulties with Participating in Appliance Rebate Program Area

Difficulty	Overall	Upstate	Downstate
Sample size	*30*	*14*	*16*
Confusion over which appliances qualify	25%	29%	19%
Technical problems online	23%	29%	13%
Required information was overly burdensome	18%	14%	25%
Receipt requirements were too strict	18%	21%	13%
Difficult finding out about Program Area requirements	9%	7%	13%
Process took too long	4%	0%	13%
Being wait-listed was frustrating	2%	0%	6%
Other	7%	7%	7%

Note: This was an open-ended question for which surveyed participants provided multiple responses.

Note: Base is respondents who had said participation was somewhat or very difficult.

G2. ENERGY CODE PROGRAM AREA

Early Code Adoption

NYSERDA Program Area staff and DOS staff provided a comprehensive overview of the code adoption process and timing, as well as ARRA's impact on these topics.

Energy Code Timing

ARRA funding accelerated new Energy Code adoption in New York State by two years. New York introduced its first Energy Code in 1979, and transitioned to the ECCCNYS in 2002 (effective July 1, 2002) based on a national model energy code, with assistance from the 1999 DOE State Energy Code Assistance Grant. In April 2008, the Energy Code was updated based on ASHRAE 90.1-2004 for commercial buildings. This code is typically updated every three years.

DOS staff reported that the State was prepared to update to the 2006 IECC in April 2010. However, in early 2009, then-Governor David Paterson chose to take advantage of ARRA funding to advance the Energy Code, requiring the State to adopt the 2009 IECC and ASHRAE 90.1-2007. This effort passed implementation of the 2006 IECC entirely. The adoption process required considerable time to evaluate the impacts of the new code, determine New York-specific exceptions to the code, and confirm compliance with other State requirements. Early training curriculum was developed and delivered in advance of the code's effective date of December 28, 2010.

New York operated under the 2004 IECC for residential and ASHRAE 90.1-2004 for commercial from April 2010 to December 2010. Without ARRA, the State would have updated to the more stringent 2006 IECC during that time, although the commercial code would have remained the same. Any residential buildings that received construction permits during this period were therefore covered by a less stringent code, which likely resulted in lost energy savings potential for the State.

ARRA funding accelerated adoption of the 2009 IECC and ASHRAE 90.1-2007 by about 16 months. Based on the views of DOS staff, the schedule for future code adoptions will be unaffected by ARRA. These changes are shown in Table G-9.

Table G-9. Expected Effective Dates for Code Adoption, Energy Code Program Area

	Without ARRA		With ARRA	
Effective Date	**Residential**	**Commercial**	**Residential**	**Commercial**
Prior to April 2010	2004 IECC	2003 IECC/ASHRAE 04	2004 IECC	2003 IECC/ASHRAE 04
April 2010	**2006 IECC**	ASHRAE 04	2004 IECC	ASHRAE 04
December 28, 2010	2006 IECC	ASHRAE 04	**2009 IECC**	**ASHRAE 07**
April 2012	**2009 IECC**	**ASHRAE 07**	2009 IECC	ASHRAE 07
April 2015	**2012 IECC**	**ASHRAE 10**	**2012 IECC**	**ASHRAE 10**

Note: Cells with **bold text** indicate a code change under each scenario.

Another impact of ARRA was its effect on the "50% rule" for both commercial and residential construction. New York had exempted building renovations from the Energy Code if they affected less than 50% of the building floor area (NYS Energy Law, Article 11). For example, if a developer remodeled only 48 floors of a 100-story building, the project would be exempt from code requirements. DOS officials believed this undermined code compliance may have prevented many buildings from achieving code-required performance. Given the requirement in ARRA to demonstrate 90% code compliance, legislation eliminating this exemption was passed and all renovated buildings are required to comply. DOS officials project a higher code compliance rate and substantial improvement in energy performance now that all permitted projects must meet the code requirements for implemented work.

The earlier code adoption due to ARRA should result in considerable energy savings, which are expected to offset the lost energy potential from the planned code upgrade that was delayed from April 2010 to December 2010. The gross energy savings impacts for the code change and the elimination of the exemption will be calculated by the Cadmus Team in a follow-up report in May 2012.

Energy Code Content

New York State based the most recently adopted code, ECCCNYS 2010, on the 2009 IECC. However, several more stringent provisions were added; including those for party walls in multifamily dwellings, demand controlled ventilation, and air barrier sealing.

Despite these differences, one DOS official stated the current Energy Code is the least different from the IECC model code than it has ever been. DOS staff indicated that the additional provisions added to the 2009 IECC were not a result of ARRA funding, but instead intended to match New York-specific concerns.

Energy Code Compliance

Compliance represents the degree to which new buildings reflect the provisions of the prevailing Energy Code. One requirement of ARRA funding, as noted above, is that the State must develop and implement a plan to achieve 90% compliance with the target codes by 2017, including measuring current compliance each year.

Vermont Energy Investment Corporation (VEIC) conducted a baseline compliance study[2] for buildings constructed before the code update. VEIC used two different methodologies and determined that compliance with previous energy codes did not achieve 90% compliance. One method VEIC followed was using the DOE Building Energy Code Program (BECP) protocol to define compliance as the percentage of all Energy Code requirements that were met as determined using a checklist developed by

[2] VEIC. *New York Energy Code Compliance Study*. 2011.

Pacific Northwest National Laboratories. The other method VEIC followed was using a set of common compliance tools, REScheck™ and COMcheck™, to examine building component performance through the heat transfer rate.

NYSERDA and the Cadmus Team identified limitations in the VEIC analysis that affect the accuracy of the compliance rate estimates. Due to budget limitations, VEIC's new commercial building sample consisted of only 26 buildings, 22 of which were designed to the latest commercial code and four of which were designed to the prior code. The 22 designed to ASHRAE Standard 90.1-2007 represent only half the number of buildings recommended by the BECP protocol for new commercial buildings. In addition, VEIC included a sample of 44 new residential buildings (consistent with the BECP protocol). VEIC did not assess compliance for any commercial or residential renovation projects due to insufficient documentation to adequately identify and characterize renovation projects.

However, VEIC's analysis produced a number of important recommendations, as well as a reasonable foundation for future compliance study projects. Their primary recommendations included:

- Modify and simplify the suggested BECP protocol to create a streamlined approach for ongoing monitoring and compliance assessment,
- Systemize New York State data collection for compliance evaluation and interpretation,
- Address gaps in compliance and enforcement priorities, and
- Address legislative context and obstacles.

Additional details can be found in the VEIC report. The Cadmus Team believes these recommendations can improve compliance rates.

Future studies of code compliance will be conducted by NYSERDA under its SBC ratepayer-funded Technology and Market Development Program.

Training Participant Results

As part of the code adoption process, DOS and NYSERDA developed training for relevant stakeholders, primarily CEOs but also including architects, engineers, builders, contractors, realtors, and vendors. ARRA requirements for 90% compliance by 2017 were a significant motivation for this increased level of training services.

The survey questions and format that the Cadmus Team conducted with Wave 1 and Wave 2 participants differed due to timing and the other limitations previously noted. Through these surveys, participants provided feedback on marketing efforts, their satisfaction, and the trainings' effectiveness.

The Cadmus Team analyzed the training survey data and had intended to disaggregate survey results between CEOs and industry professionals required to comply with the code, such as architects, engineers, and builders. Unfortunately, raw survey data from Wave 1 pre-training surveys were not available to provide this level of detail. Consequently, the Cadmus Team also aggregated results for the Wave 1 pre- and post-training surveys, since it was not possible to compare the pre- and post-training results separately by participant group. However, the Cadmus Team was able to examine differing responses from CEOs and industry professionals for the Wave 1 post-training and for both pre- and post-training Wave 2 surveys.

The survey sample dispositions for each wave are shown in Table G-10 and Table G-11. The Cadmus Team attempted to present the highest feasible granularity available for each set of survey responses by separating them into pre- and post-training responses, as well as by segregating responses from CEOs and industry professionals. The Wave 2 results provided the best data on participant feedback due to the high level of granularity available in the responses and the participants' immediate opportunity to provide feedback on training details.

Table G-10. Survey Disposition for Wave 1 (Spring 2011), Energy Code Program Area

	Pre-Training		Post-Training	
Occupation	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
Code Official	153	22%	97	47%
Architect	193	28%	12	6%
Builder	22	3%	19	9%
Electrician	6	1%	2	1%
Engineer	123	18%	2	1%
General Contractor	17	2%	10	5%
HERS Rater	7	1%	7	3%
HVAC Contractor	9	1%	4	2%
Third-Party Inspector	22	3%	4	2%
Other	148	21%	51	25%
Total	**700**		**208**	

Table G-11. Survey Disposition for Wave 2 (Fall 2011), Energy Code Program Area

Occupation	**Frequency**	**Portion of Total**
Code Official (CEOs)	188	57%
Architect	21	6%
Builder	22	7%
Electrician	1	0%
Engineer	30	9%
General Contractor	15	5%
HERS Rater	2	1%
HVAC Contractor	4	1%
Third-Party Inspector	2	1%
Other	44	13%
Total	**329**	

Wave 1 post-training surveys do not reflect a similar disposition to Wave 1 pre-training surveys, indicating that the industry professionals who represented the majority of the Wave 1 trainings (such as architects, builders, and engineers) were less motivated to respond to the online post-training survey. Wave 2 results show a high level of response from CEOs (57%), similar to that achieved for the Wave 1 post-training survey (47%). The CEOs demonstrated a higher response rate than the industry professionals, likely because of their role and regular training requirements, and/or the requirement of submitting surveys in order to have their mandated training considered complete.

These trainings met a variety of participants' needs. DOS requires CEOs to attend code training annually. Architects and engineers often need to receive continuing education credits, and these trainings were

approved for credit. Table G-12 and Table G-13 indicate that providing continuing education credit was one of the main reasons participants attended these trainings.

For Wave 2, the Cadmus Team was able to distinguish between CEOs and industry professionals, and the results in Table G-13 show that education credits were the primary reason CEOs attended. Industry professionals indicated they were motivated to attend primarily to improve their professional knowledge, but gave education credits as the second largest motivation.

VEIC's baseline compliance report recommended that New York State increase code knowledge in the building trades community. The survey results suggest that NYSERDA and DOS efforts are beginning to fulfill this objective, with industry professionals using the trainings to improve their professional understanding of code issues.

Table G-12. Training Motivation for Wave 1 and Wave 2 Participants, Energy Code Program Area

	Wave 1		Wave 2	
Motivation	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
Required by my professional organization	40	6%	28	9%
Required by my employer/job	37	6%	30	9%
To improve my professional knowledge	361	55%	156	48%
For the continuing education credits	188	29%	111	34%
Other	31	5%	3	1%
Total	**657**		**328**	

Note: Totals may not sum to 100% due to rounding.

Table G-13. Training Motivation for Wave 2 Code Enforcement vs. Industry Professionals, Energy Code Program Area

	Code Enforcement Officials		Industry Professionals	
Motivation	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
Required by my professional organization	18	10%	10	7%
Required by my employer/job	15	8%	15	11%
To improve my professional knowledge	83	44%	73	52%
For the continuing education credits	69	37%	42	30%
Other	2	1%	1	1%
Total	**187**		**141**	

The NYSERDA Energy Code Program Area implementation staff used a variety of methods to recruit participants, including contractors, a Website, e-mail, and mail (Table G-14). NYSERDA and DOS combined reached the largest portion of participants in both waves (53% of Wave 1 and 37% of Wave 2 participants who responded to the surveys). Another source of training participants involved professional channels, such as the New York State Builders Association and architectural and engineering professional associations, which combined recruited 12% of Wave 1 participants and 22% of Wave 2 respondents.

Table G-14. Sources of Training Notification, Energy Code Program Area

	Wave 1		Wave 2	
Source	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
New York State Builders Association	17	2%	29	9%
DOS	91	10%	68	21%
NYSERDA	376	43%	62	16%
Colleague	132	15%	31	9%
Word-of-mouth	72	8%	24	7%
Professional organization	89	10%	44	13%
Other	90	10%	70	21%
Total	**867**		**328**	

Note: Totals may not sum to 100% due to rounding.

The pre- and post-training surveys inquired about participants' knowledge of the ECCCNYS 2010, as shown in Table G-15 and Table G-16. Participants rated their knowledge of the code on a scale of 0 to 9, with 0 indicating no knowledge and 10 indicating complete knowledge. The Cadmus Team then converted these results into weighted averages based on the number of respondents that provided each rating on the scale. The data collected from the Wave 1 pre-training survey was incomplete. The survey contractor could not provide the frequency of respondents who provided a rating of 10 on rating questions. As respondents were not required to provide an answer for pre-training survey questions, the Cadmus Team could not differentiate between those respondents who did not provide an answer and those who provided a rating of 10 for questions requesting a rating. Due to the uncertainty in the number of respondents providing a rating of 10, the Cadmus Team considered the rating scale for Wave 1 pre-training surveys to be 0 to 9, with 0 indicating no knowledge and 9 indicating strong knowledge.

The Wave 1 pre-training survey asked participants about their level of understanding the ECCCNYS 2010 before training, to which their average response was 4.2 on the 0 to 9 point rating scale (Table G-15). The Wave 1 post-training survey, conducted online six months or more after the training and using a scale of 0 to 10, inquired about participants' perceptions of their knowledge of the code before and after the training, allowing a comparison of how participants' perceptions of their prior knowledge may have changed from before to after the training. The Wave 2 survey respondents reported that their average rating for understanding the code was 5.7 before the training and 7.0 after the training, an increase of 1.3 points on the rating scale. Because of the differences in the respondents and rating scale, it is not possible to compare the pre- and post-training survey results directly.

Table G-15. Participant Understanding of ECCCNYS 2010, Energy Code Program Area

	Responses 6-Months Post-Training	
Pre-Training (n=586)	**Understanding Before Training (n=179)**	**Understanding After Training (n=179)**
4.2	5.7	7.0

The Wave 2 pre-training and post-training surveys collected data consistently, in which participants rated their knowledge of the code on a scale of 0 to 10, with 0 indicating no knowledge and 10 indicating complete knowledge. The Wave 2 participant results showed that CEOs reported having higher initial familiarity with the code than professionals who had to comply with the code (5.3 versus 4.4,

respectively). However, both groups considered their post-training level of familiarity to be nearly equivalent (7.2 versus 7.1, respectively; Table G-16).

Table G-16. Wave 2 Participant Understanding of ECCCNYS 2010, Energy Code Program Area

Period	Code Enforcement Officials	Industry Professionals	Overall
Pre-Training	5.3 (n=189)	4.4 (n=141)	4.9
Post-Training	7.2 (n=168)	7.1 (n=137)	7.2

The Cadmus Team examined Wave 1 and Wave 2 results for participant understanding of ECCCNYS 2010 using the Wilcoxon signed-rank test.[3] Even though the ranked improvement was relatively small (1.3 for Wave 1 and 2.3 for Wave 2), the test shows a statistically significant positive change in each group's ranking of their ECCCNYS 2010 knowledge after the ARRA-funded training and support services.

The Cadmus Team asked participants their overall level of satisfaction with the training. Table G-17 shows the results. Participants rated their satisfaction on a 0 to 10 scale, with 0 indicating high dissatisfaction and 10 indicating high satisfaction. Wave 1 post-training survey participants who were surveyed at least six months after the training reported slightly positive satisfaction (6.9 compared to a neutral point of 4.5). Wave 2 participants, surveyed immediately after the training, reported very high satisfaction (8.4). Since the Cadmus Team did not have satisfaction data collected immediately after training from the Wave 1 participants, it is uncertain whether the lower ratings by the Wave 1 participants was due to the passage of time since the training or some inherent differences in the satisfaction with the training. In each case, industry professionals indicated slightly higher satisfaction than CEOs, consistent with the larger increase in their understanding as was shown in Table G-15.

Table G-17. Participant Satisfaction with Code Training, Energy Code Program Area

Wave	Code Enforcement Officials	Industry Professionals	Overall
1	6.9 (n=90)	6.9 (n=89)	6.9
2	8.3 (n=167)	8.6 (n=137)	8.4

During pre-training surveys, participants provided feedback on the importance of enforcing the ECCCNYS 2010 provisions in new and existing buildings in their community. The weighted average results used the 0 to 9 scale, and are shown in Table G-18. As might be expected, CEOs in Wave 2 rated enforcing the code as slightly more important than industry professionals did, although both groups indicated that enforcement has high importance. In all cases, the respondents rated enforcing the code in renovations as important, but gave it a slightly lower rating than enforcing it in new buildings.

[3] More details on this method can be found at: http://www.experiment-resources.com/wilcoxon-signed-rank-test.html.

Table G-18. Participant Views on the Importance of Enforcing ECCCNYS 2010 Provisions, Energy Code Program Area

	Wave 1	Wave 2		
Building Type	**All**	**Code Enforcement Officials (n=189)**	**Industry Professionals (n=138)**	**Overall**
New	7.3 (n=409)	8.2	7.9	8.1
Existing	6.8 (n=449)	7.7	7.4	7.5

Participants also rated the importance for new buildings to comply with the Energy Code, as shown in Table G-19. The results are similar to those for enforcing new building codes, with participants ranking compliance as even more important than enforcement.

Table G-19. Participant Views on the Importance for New Buildings to Comply with the Code, Energy Code Program Area

Wave 1	Wave 2		
All (n=409)	**Code Enforcement Officials (n=185)**	**Industry Professionals (n=142)**	**Overall**
7.7	8.9	8.8	8.9

Respondents rated their views on increasing the stringency of the Energy Code with time, as implemented through regular adoption of more advanced codes based on successive versions of the IECC and ASHRAE. The respondents also considered this important, as shown in Table G-20, although they believed it to be slightly less important than code enforcement or compliance.

Table G-20. Participant Views on Increasing the Stringency of the Code, Energy Code Program Area

Wave 1	Wave 2		
All (n=435)	**Code Enforcement Officials (n=187)**	**Industry Professionals (n=140)**	**Overall**
6.8	7.5	7.6	7.5

One Program Area training and support service goal was to provide participants with an overview of the plan review process for implementing or complying with the ECCCNYS 2010. Program Area implementation staff indicated this training generated less than the expected interest among CEOs and industry professionals. Staff reported that although contractors performed good outreach, the training was only successful in one location. Staff believed the CEOs and industry professionals were uncomfortable with the thought of someone "looking over their shoulder" during the plan review process.

The Cadmus Team identified six participants who reported taking the Green Building Residential Plans Examiner Certification course. Participants rated the plan review overview portion of the training on a scale of 0 to 9, where 0 indicates that it was not at all helpful and 9 indicates that it was extremely helpful (Table G-21). On average, participants considered the plan review overview to be slightly helpful (6.8).

Table G-21. Participant Rating of Plan Review Overview Training Helpfulness, Energy Code Program Area

Course	Code Officials (n=6)
Green Building Residential Examiner Certification	6.8

Program Area implementation staff emphasized that the trainings to date were early efforts which will be evaluated internally by NYSERDA Energy Code staff. Updated in-person and online trainings will be delivered throughout 2012.

G3. ENERGY-EFFICIENCY PROGRAM AREA

Participant Survey Findings

The attribution survey had the main purpose of collecting data that would allow the Cadmus Team to estimate freeridership and net savings resulting from the NYSERDA ARRA Energy-Efficiency Program Area. However, the survey also explored key process questions, such as sources of information about the Program Area, the application process, and ease of participation, summarized below.

Program Area Awareness and Motivation to Participate

As shown in Table G-22, respondents learned about the Energy-Efficiency Program Area in a variety of ways. A large proportion heard about it through NYSERDA sources, with 17% having received an e-mail or mailing from NYSERDA, 16% having seen the Program Area on the NYSERDA Website, and three respondents (5%) citing Program Area marketing materials as their source of awareness. In addition, 19% of respondents had learned of the Energy-Efficiency Program Area through previously participating in another NYSERDA program. Contractors and installers (20%) as well as word-of-mouth (8%) were also sources of awareness. This finding supports a strategy of maintaining multiple channels of marketing future NYSERDA programs, as the NYSERDA ARRA Program Area funding is no longer available.

Table G-22. How Participants Heard about Energy-Efficiency Program Area (Multiple Responses)

Sources of Awareness	
Sample size	*51*
Contractor/installer	10 (20%)
NYSERDA Website	10 (16%)
E-mail or mailing from NYSERDA	9 (17%)
Participation in other NYSERDA program	8 (19%)
Word-of-mouth (colleague, friend, family member)	5 (8%)
Through NYSERDA's FlexTech Program	4 (6%)
Program Area marketing materials	3 (5%)
Announced by city agency	2 (3%)
Energy consultant	2 (3%)
Local government office	1 (1%)
Grant writer	1 (1%)
Independent research	1 (2%)
Announced by U.S. president	1 (1%)
University Sustainability Office	1 (1%)
Don't know/refused	2 (5%)

Note: The numbers after the parentheses are unweighted frequencies, while the percentages reflect weighted data

Respondents were asked why they decided to apply for NYSERDA funds to implement the project. As shown in Table G-23, a substantial proportion (40%) indicated that their budgets could not accommodate the work without the ARRA funding. Other reasons for applying for the funds include that the respondents' organizations could not find funding from other sources (21%) and that the work would reduce the energy costs for their facilities (12%) or further their own energy savings pursuits (9%). Respondents also thought there was a strong likelihood of getting the funding (8%), that it would provide additional funds for the project (8%), and that they their chances of securing the funds were strong (8%). Additional reasons, cited by smaller percentages of respondents were that the funding would accelerate the project and that the funding was better than in other programs. These findings suggest that, as the Program Area theory anticipated, many participants turned to NYSERDA ARRA to fund projects that may not have otherwise moved forward without the Program Area. However, other participants voiced reasons for applying to the Program Area that may indicate that the project would have moved forward without NYSERDA ARRA funds.

Table G-23. Why Applied for NYSERDA Funds (Multiple Responses), Energy-Efficiency Program Area

Reason	
Sample size	*51*
Could not afford the project without funding	40% (21)
Could not find funding from other sources	21% (8)
Would reduce energy costs for facility	12% (6)
Would further the pursuit of energy savings	9% (5)
Would provide additional funds for project	8% (5)
Thought chances of getting funding were good	8% (4)
Looking to accelerate project	4% (3)
Contractor suggestion	5% (2)
Organization always needs support	3% (2)
Funding better than other programs	3% (2)
Other sources required matching or leveraged funds	2% (1)
Requirement to reduce emissions by 30% by 2017	1% (1)
Needed to upgrade equipment	2% (1)

Note: Total may not equal 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

When planning this evaluation, some NYSERDA Program Area staff members wanted to know if the source of the funds—the national ARRA legislation—enticed people to apply to the Program Area. The ARRA legislation had received a great deal of media coverage, being presented as a way to create jobs and end the recession. NYSERDA staff members thought that the media attention and support for the goals of the broader ARRA legislation may have increased interest in the Program Area. Therefore, respondents were also asked whether the fact that the funds were provided by ARRA affected their decision to apply for NYSERDA funds, using a scale from 1 (indicating that it was a critical negative factor) to 5 (indicating it was a critical positive factor). Table G-24 shows that 44% of respondents said that the fact that AARA provided the funds was not a factor at all in applying, while the remaining respondents said it was either "somewhat of a positive factor" (32%) or a "critical positive factor" (24%)

in applying. The results indicate that the source of the funds was of moderate importance to the participants, and none originally viewed the fact that the funds came from ARRA as a negative factor.

Table G-24. Influence of ARRA Funding on Decision to Apply for NYSERDA Funds, Energy-Efficiency Program Area

Influence	
Sample size	*51*
Mean	*3.8*
1 Critical negative factor	0% (0)
2 Somewhat of a negative factor	0% (0)
3 Not a factor at all	44% (21)
4 Somewhat of a positive factor	32% (17)
5 Critical positive factor	24% (13)

Note: Total may not equal 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

The NYSERDA ARRA funds were to be distributed quickly, and NYSERDA believed that some participants may have applied for the funds because they offered a way to implement planned energy-efficiency projects on a shorter time frame than waiting for other sources of funding to manifest. In fact, staff members indicated that they encourage some organizations on the wait lists for other NYSERDA programs to apply for NYSERDA ARRA Program Areas in an effort to accelerate project implementation. The effect of the NYSERDA funds' timing on the decision to apply for funds was gauged by asking respondents, "*To what extent was your decision to apply for funds from NYSERDA affected by <u>when</u> the funds would become available?*" (Table G-25). Respondents rated the influence of the funds timing on the same scale of 1 to 5 as in the previous question. The majority of respondents (67%) said that the timing was a positive factor in their decision to apply, while 31% said it was not a factor at all. Only one respondent (1%) indicated that the timing was a negative factor in applying for the funds. These findings support the Program Area theory that the short time frame in which the NYSERDA ARRA funds became available was a positive factor in inducing participation.

Table G-25. Influence of NYSERDA Funds Timing on Decision to Apply, Energy-Efficiency Program Area

Influence	
Sample size	*51*
Mean	*4.0*
1 Critical negative factor	0
2 Somewhat of a negative factor	1% (1)
3 Not at all a factor	31% (19)
4 Somewhat of a positive factor	30% (14)
5 Critical positive factor	37% (17)

Note: Total may not equal 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

In an effort to understand whether prior participation in other NYSERDA programs influenced participation in the Program Area, the Cadmus Team asked the respondents a series of questions about prior experiences with NYSERDA programs. The first question in this series asked respondents to relate whether they had previously participated in any other NYSERDA energy efficiency, energy conservation, or renewable energy programs. As shown in Table G-26, over three-quarters of respondents (76%) reported that they had.

Table G-26. Previous Participation in Other NYSERDA Energy Efficiency, Energy Conservation, or Renewable Energy Programs, Energy-Efficiency Program Area

Participation in Another NYSERDA Program	
Sample size	*51*
Yes	76% (36)
No	18% (11)
Don't know/Refused	6% (4)

Note: Total may not equal 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Those who had previously taken part in other programs were next asked to describe the type of prior program in which they had participated. Table G-27 shows that many of the interviewees had participated in multiple programs of various types. More than two-thirds (69%) of respondents who had participated in other NYSERDA programs said they had participated in programs involving incentives for replacing equipment, while 50% had participated in an energy audit. A slightly smaller percentage had participated in new construction programs or technical studies (45% and 48%, respectively). Twelve percent of respondents had participated in a renewable energy program.[4] The fact that many respondents have taken part in more than one type of NYSERDA program suggests they are committed to energy efficiency and renewable energy.

[4] Several of the interviewees specified the NYSERDA program(s) in which they had participated. Eight respondents reported having participated in the FlexTech Program, four had participated in an energy conservation measure program, one had participated in a NYSERDA community project, and one had taken part in the Green Jobs Green New York Program.

Table G-27. Types of NYSERDA Programs in Which Respondents Have Participated (Multiple Responses), Energy-Efficiency Program Area

Influence	
Sample size	*36*
Equipment replacement incentive	69% (25)
Energy audit*	50% (17)
Technical study*	48% (16)
New construction	45% (15)
Renewable energy	12% (3)
Other	4% (2)

Note: Base is respondents who had previously participated in other NYSERDA programs.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Using a scale from 1 (indicating a negative influence) to 5 (indicating a positive influence), respondents who had participated in other NYSERDA programs indicated the type and extent of influence their experience with those programs had on their decision to apply for NYSERDA ARRA funding. As shown in Table G-28, more than three-quarters of these respondents (80%) indicated that the prior programs positively influenced their decision to apply for NYSERDA funds (i.e., gave a rating of 4 or 5), while the remaining respondents (20%) said that their past experience with NYSERDA programs had no influence on their decision. These findings indicate that other NYSERDA programs induced at least some least some informal spillover for the NYSERDA ARRA Program Area, in that a positive prior experience contributed to the reasons most respondents applied for the NYSERDA ARRA Program Area.

Table G-28. Influence of Past NYSERDA Program Experience on Decision to Apply for ARRA Funds, Energy-Efficiency Program Area

Influence	
Sample size	*36*
Mean influence rating	*4.2*
1 Negatively influential	0% (0)
2 Somewhat negatively influential	0% (0)
3 Not at all influential	20% (7)
4 Somewhat positively influential	40% (15)
5 Positively influential	40% (14)

Note: Base is respondents who had previously participated in other NYSERDA programs.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

NYSERDA staff also wanted to understand if the measures installed through NYSERDA ARRA had been recommended in prior programs, especially the FlexTech and Technical Assistance programs or the NYSERDA ARRA funded ECS Program Area. Therefore, the final question about prior participation asked respondents whether the measures installed through the current Program Area had been recommended in a previous NYSERDA energy-efficiency audit or study (Table G-29). Over one-third (38%) responded affirmatively, eight of whom said that the measures were recommended in a FlexTech

Program study or audit, although these assertions have not been verified with the FlexTech Program data. It appears that NYSERDA ARRA provided a source of funds for at least some participants to implement measures recommended in prior studies, which was desirable based on the Program Area theory.

Table G-29. Whether Installed Measures Were Recommended in Previous NYSERDA Audit or Study, Energy-Efficiency Program Area

Whether Installed Measures Through Current Program Area were Recommended in Previous NYSERDA Study or Audit	
Sample size	*36*
Yes	38% (13)
No	62% (23)

Note: Base is respondents who had previously participated in other NYSERDA programs.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

G4. RENEWABLE ENERGY PROGRAM AREA

Process Findings (1613)

Participant Survey Findings

This section reports the results of the process-related portions of the online survey of RFP 1613 participants that installed renewable energy systems. Respondents included representatives of municipalities, universities, schools, and not-for-profits. The most commonly installed renewable energy technology was PV (n=37; 29 Upstate and eight Downstate). The non-PV projects (n=7) included wind turbines, biomass boilers, solar water heaters, solar walls, and solar CHP systems.

Overall, the average *ex ante* annual energy generation for each project is 256 MMBtu (Table G-30), based on Program Area tracking records. However, the size of the projects varies among the technologies, as non-PV projects have the highest expected annual generation (705 MMBtu), followed by Downstate PV (193 MMBtu) and Upstate PV (165 MMBtu).

Table G-30. Energy Generation of RFP 1613 Renewable Energy Projects, Renewable Energy Program Area

Annual Energy Generation	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*44*	*29*	*8*	*7*
Average annual energy generation, MMBtu*	256	165	193	705
Less than 100 MMBtu	18% (8)	17% (5)	50% (2)	14% (1)
100 MMBtu to less than 200 MMBtu	48% (21)	59% (17)	13% (1)	43% (3)
200 MMBtu to less than 300 MMBtu	27% (12)	24% (7)	63% (5)	0% (0)
More than 300 MMBtu	7% (3)	0% (0)	0% (0)	43% (3)

* Energy generation data were not weighted.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Program Area Awareness and Motivation to Participate

The initial survey questions for the Renewable Energy Program Area focused on how respondents heard about RFP 1613, their motivations for participating, and their past participation in other renewable energy or energy-efficiency programs.[5]

As shown in Table G-31, respondents learned about the Renewable Energy Program Area in a variety of ways.[6] A large proportion heard about it through NYSERDA sources, with over one-quarter (26%) mentioning the NYSERDA Website, 22% mentioning e-mails or mailings from NYSERDA, and a few respondents citing the FlexTech Program or another NYSERDA program (2% each) as sources of awareness. Renewable energy contractors and installers were mentioned by 30% of respondents. Other important sources include stories in the media (16%), word-of-mouth (14%), and local and state governments (13%). This finding seems to support a strategy of maintaining multiple marketing channels for future NYSERDA programs, as the NYSERDA ARRA Program Area funding is no longer available.

Renewable Energy Program Area outreach and marketing appear to have been moderately successful: 9% cited Program Area marketing materials and 6% cited Program Area outreach sessions, and a similar proportion (5%) mentioned Webinars as ways in which they learned about the Program Area.

[5] Survey data were collected in two phases. Thirty five completed surveys were included in the analysis of process-related questions. Data for nine additional surveys were received on February 10, 2012, and were included in the analysis.

[6] Survey responses for the overall population were weighted by the weights developed for the NTG analysis. The Cadmus Team developed weights based on anticipated savings from all active RFP 1613 renewable energy projects.

Table G-31. How Participants Heard about Renewable Energy Program Area (Multiple Responses)

Sources of Awareness	Overall**	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Renewable energy contractor/installer	30% (10)	29% (7)	1 (20%)	33% (2)
NYSERDA Website	26% (12)	42% (10)	1 (20%)	17% (1)
E-mail or mailing from NYSERDA	22% (10)	38% (9)	0% (0)	17% (1)
Story in the media	16% (7)	21% (5)	1 (20%)	17% (1)
Word-of-mouth (e.g., colleague, friend, family member)	14% (4)	8% (2)	1 (20%)	17% (1)
Town/state government	13% (4)	13% (3)	0% (0)	17% (1)
Program Area marketing materials	9% (6)	25% (6)	0% (0)	0% (0)
Independent research	10% (2)	4% (1)	0% (0)	17% (1)
Grant writer	5% (1)	0% (0)	20% (1)	0% (0)
Program Area outreach sessions	6% (4)	17% (4)	0% (0)	0% (0)
Webinar	5% (3)	13% (3)	0% (0)	0% (0)
Architect	3% (2)	8% (2)	0% (0)	0% (0)
Johnson Controls representative	3% (2)	8% (2)	0% (0)	0% (0)
NYSERDA's FlexTech Program	2% (1)	4% (1)	0% (0)	0% (0)
Participation in another NYSERDA program	2% (1)	4%* (1)	0% (0)	0% (0)
Other	3% (2)	8% (2)	0% (0)	0% (0)
Don't know	9% (1)	0% (0)	0% (0)	1 (17%)

* This respondent participated in the Pilot PV Panels Program.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

When asked to name the most important reason they chose the equipment they had installed with the assistance of NYSERDA ARRA funding, more than one-half (52%) said that they did so in order to save energy or reduce energy bills (Table G-32). Twenty one percent sought to promote renewable energy, and 12% installed the equipment to increase energy independence. Other motivations mentioned by respondents were improving public relations and green marketing (9%), concern for the environment (4%), and reducing their organization's carbon emissions (3%).

Table G-32. Why Chose to Install Specific Equipment, Renewable Energy Program Area

Reason	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Reduce energy bills/energy savings	52% (23)	75% (18)	60% (3)	33% (2)
Promote renewable energy	21% (4)	4% (1)	20% (1)	33% (2)
Increase energy independence	12% (3)	8% (2)	0% (0)	17% (1)
Green marketing/public relations	9% (1)	0% (0)	0% (0)	17% (1)
Concern for environment	4% (2)	4% (1)	20% (1)	0% (0)
Reduce carbon footprint/emissions	3% (2)	8% (2)	0% (0)	0% (0)

Note: Columns may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

The subsequent question asked respondents why they decided to apply for NYSERDA ARRA funds for the equipment (Table G-33). The majority (70%) did so because their budgets did not allow for the work to be completed without the funding. Fourteen percent thought that they stood a good chance of getting the NYSERDA funding, and 12% could not find funding from other sources. One project (2%) was already in the works, but the funding allowed the project to be completed sooner. This finding suggests that, just as the Program Area theory anticipated, many participants turned to NYSERDA ARRA to fund projects that may not have otherwise moved forward without the Program Area.

Table G-33. Why Applied for NYSERDA Funds, Renewable Energy Program Area

Reason	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Could not afford to do work without funding	70% (26)	79% (19)	60% (3)	67% (4)
Thought chances of getting funding were good	14% (4)	8% (2)	20% (1)	17% (1)
Could not find funding from other sources	12% (3)	8% (2)	0% (0)	17% (1)
Wanted to accelerate project	2% (1)	0% (0)	20% (1)	0% (0)
Other	2% (1)	4% (1)	0% (0)	0% (0)

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

All respondents answered affirmatively when asked if they were aware at the time of the survey that the funding their organization received from NYSERDA for the equipment was provided by the federal government through ARRA. They were then asked *when* they became aware that the funds were provided by ARRA (Table G-34). The vast majority (91%) became aware of this fact when they first learned about the Renewable Energy Program Area, but a few respondents were not aware until the application review process (2%) or when the funds were actually awarded (3%).

Table G-34. When Became Aware of ARRA Funding, Renewable Energy Program Area

Stage of Application/Project	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
When learned about Renewable Energy Program Area	91% (29)	75% (18)	100% (5)	100% (6)
During application review process	2% (1)	4% (1)	0% (0)	0% (0)
When funds were awarded	3% (2)	8% (2)	0% (0)	0% (0)
Don't know	5% (3)	13% (3)	0% (0)	0% (0)

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

When planning this evaluation, some NYSERDA staff members wanted to know if the fact that ARRA was the source of the funds enticed participants to apply for the NYSERDA funds. The ARRA legislation had received a great deal of media coverage, being presented as a way to get the United States out of the recession and back to work again. NYSERDA staff members thought that this broader support for ARRA and its goals increased interest in the Program Area. Therefore, respondents were asked how the fact that the NYSERDA funds were provided by ARRA affected their decision to apply, on a scale from being a critical negative factor (i.e., a major barrier to applying) to being a critical positive factor (a major driver of applying; Table G-35). While the majority (54%) said this was not a factor in their decision at all, a substantial proportion (46%) said it was either somewhat of a positive factor or was a critical positive factor. The fact that the funds were provided by ARRA was not a negative factor for any of the respondents.

Table G-35. Influence of ARRA Funding on Decision to Apply for NYSERDA Funds, Renewable Energy Program Area

Influence	Overall*	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Critical negative factor	0% (0)	0% (0)	0% (0)	0% (0)
Somewhat of a negative factor	0% (0)	0% (0)	0% (0)	0% (0)
Not at all a factor	54% (20)	58% (14)	60% (3)	50% (3)
Somewhat of a positive factor	19% (7)	21% (5)	20% (1)	17% (1)
Critical positive factor	27% (8)	21% (5)	20% (1)	33% (2)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

It is also the case that the NYSERDA ARRA funds were to be distributed quickly, and NYSERDA believed that some participants may have applied for the funds because they offered a way to implement renewable energy projects on a shorter timeframe than waiting for other sources of funding. The effect of the NYSERDA funds timing on respondents' decision to apply was gauged by asking: "*To what extent was your decision to apply for funds from NYSERDA affected by <u>when</u> the funds became available?*" (Table G-36). For 64% of respondents, the timing was a positive factor, whereas timing was not a factor at all in the remaining respondents' decision to apply for the funds. These findings support the Program Area theory that the short time frame in which the NYSERDA ARRA funds became available was a positive factor in inducing participation.

The timing of the funds appears to have been less of a factor in the Downstate PV respondents' decisions to apply for the funds compared to the other populations; 80% of Downstate respondents said that the timing was not a factor at all, versus 25% of the Upstate PV group and 33% of the non-PV group.

Table G-36. Influence of Timing of NYSERDA Funds on Decision to Apply, Renewable Energy Program Area

Influence	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Critical negative factor	0% (0)	0% (0)	0% (0)	0% (0)
Somewhat of a negative factor	0% (0)	0% (0)	0% (0)	0% (0)
Not at all a factor	36% (12)	25% (6)	80% (4)	33% (2)
Somewhat of a positive factor	44% (15)	50% (12)	0% (0)	50% (3)
Critical positive factor	20% (8)	25% (6)	20% (1)	17% (1)

Note: Columns may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

In an effort to understand whether prior participation in other NYSERDA programs influenced participation in this Program Area, the Cadmus Team asked respondents a series of questions about their prior experiences with NYSERDA programs. The first question in this series focused on respondents' previous experiences with other renewable energy or energy-efficiency programs. First, respondents reported whether they had participated in any other NYSERDA programs before participating in the Renewable Energy Program Area. Table G-37 shows that the majority (63%) had participated in a previous program(s).

Considering the populations separately, the Downstate PV respondents were less likely than their Upstate PV and non-PV counterparts to have participated in other NYSERDA programs; only one-fifth of this group reported having participated in a NYSERDA program before.

Table G-37. Past Participation in Other NYSERDA Programs, Renewable Energy Program Area

Response	Overall*	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Yes	63%(22)	71%(17)	20%(1)	67%(4)
No	38%(13)	29%(7)	80%(4)	33%(2)

Note: Columns may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents who had participated in other NYSERDA programs were asked about the type(s) of programs in which they had participated (Table G-38). Approximately one-quarter (26%) had undergone an energy audit, and a similar proportion (22%) had participated in a new construction program. Somewhat fewer (19%) had a technical study conducted, 7% had received incentives for replacing equipment, and 7% had previously participated in another renewable energy program(s).

Table G-38. Types of NYSERDA Programs in Which Respondents Have Participated, Renewable Energy Program Area (Multiple Responses)

Type of NYSERDA Program	Overall**	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*22*	*17*	*1*	*4*
Energy audit*	26% (6)	29% (5)	0% (0)	25%(1)
New construction	22% (4)	12% (2)	100% (1)	25%(1)
Technical study*	19% (3)	12% (2)	0% (0)	25%(1)
Equipment replacement incentive	7% (3)	18% (3)	0% (0)	0% (0)
Renewable energy	7% (3)	18% (3)	0% (0)	0% (0)
Other	47% (10)	47% (8)	0% (0)	50%(2)

Note: Base is respondents who had participated in another NYSERDA program(s).

* It is unclear if respondents understand the differences between technical studies and energy audits, as the Cadmus Team did not probe respondents to clarify what they meant by giving these responses.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

These respondents were then asked how their participation in these other NYSERDA programs affected their decision to apply for the Renewable Energy Program Area (Table G-39). A "critical negative influence" indicates that previous participation in another program was a major barrier to deciding to apply to the Renewable Energy Program Area, whereas a "critical positive influence" indicates that previous participation was a major driver towards deciding to apply.

Overall, the large majority (92%) indicated that their previous experience with NYSERDA programs was a positive influence, and just one Upstate PV respondent indicated that it was a negative influence. The findings indicate that other NYSERDA programs induced at least some informal spillover to the NYSERDA ARRA Program Area, in that a positive prior experience contributed to the reasons why most respondents applied for the NYSERDA ARRA Program Area.

Table G-39. Influence of Participation in Other NYSERDA Programs on Decision to Apply for Renewable Energy Program Area

Influence	Overall*	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*22*	*17*	*1*	*4*
Critical negative influence*	3% (1)	6%(1)	0%(0)	0% (0)
Somewhat of a negative influence	0%(0)	0%(0)	0%(0)	0% (0)
Not at all a influence	5%(2)	12%(2)	0%(0)	0% (0)
Somewhat of a positive influence	51%(12)	59%(10)	0%(0)	50%(2)
Critical positive influence	7%(7)	24%(4)	100%(1)	50%(2)

Note: Base is respondents who had participated in another NYSERDA programs.

Note: Totals may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

* There was no follow-up question, so the reason this respondent answered "critical negative influence" is unknown.

The final question about prior participation asked respondents whether the measures installed through the current Program Area had been recommended in a previous NYSERDA energy-efficiency audit or study.

Out of the respondents who had participated in past NYSERDA programs, 30% said that the equipment they installed through the Renewable Energy Program Area had been recommended to them through an audit or conservation study completed through a NYSERDA program (Table G-40). It appears, then, that NYSERDA ARRA provided a source of funds for at least some participants in other programs to implement measures recommended in prior studies, which was desirable based on the Program Area theory.

Table G-40. Whether Equipment was Recommended by Previous NYSERDA Audit or Study, Renewable Energy Program Area

Response	Overall**	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*22*	*17*	*1*	*4*
Yes*	30% (4)	12% (2)	0% (0)	50% (2)
No	70% (18)	88% (15)	100% (1)	50% (2)

Note: Base is respondents who had participated in another NYSERDA program(s).

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

* Respondents were asked to specify which NYSERDA program recommended the measures installed for this Program Area, but only one respondent was able to specify a program (in this case, FlexTech).

Staff Interview Findings

Interviews conducted with Renewable Energy Program Area staff and implementation contractors yielded several relevant findings:

- The inclusion of technologies in RPF 1613 was partially driven by stakeholder input. For example, fuel cells were included as an eligible technology based on stakeholder input, though none were ultimately funded under the Renewable Energy Program Area.
- Some communities were resistant to wind and biomass projects, based on the perceived visual and air quality impacts.
- There is expected overlap between RFP 1613 and existing Renewable Portfolio Standard (RPS) programs for small wind and solar PV projects. Applicants under RPS programs were allowed to reapply under RFP 1613, thereby foregoing RPS funding in favor of ARRA funds[7].

Process Findings (1686)

This section presents the results of a telephone survey of PON 1686 end-users, an ARRA-funded offering focusing on renewable energy in the form of solar PV electric systems. Respondents included both residential (n=28) and commercial (n=3) customers.[8] All residential systems were installed Upstate and all commercial systems were installed Downstate.

Awareness and Financing

The initial survey questions assessed respondents' awareness of a number of relevant topics and funding sources, specifically, respondents' knowledge that ARRA funds and NYSERDA helped subsidize the cost

[7] Based on informal interviews with RPS program staff, RPS programs were fully subscribed during this period and were able to shift applicants to the ARRA-funded programs.

[8] Valid data for the WTP questions was collected from 19 residential respondents.

of their PV systems, general awareness of NYSERDA and programs that promote PV systems, and individual funding sources.

Both residential and commercial respondents had little awareness that ARRA funding supported the cost of their PV systems. Only 18% of residential respondents and one of three commercial respondents were aware of the ARRA funding (Table G-41). These low levels of awareness may be explained by the fact that ARRA funding was sent directly to the system installer, who may or may not have informed their customer respondents about the specifics of the funding. However, nearly all respondents were aware that NYSERDA helped reduce the costs of their PV systems, suggesting that installers shared at least some information about the Program Area with participants. It is notable that the installers interviewed all indicated that the use of ARRA funds was explained to each customer. It appears that customers may not have fully understood the relationship between NYSERDA and the ARRA funding and simplified the funding source to only include NYSERDA.

Table G-41. Awareness That ARRA Funding Supported the Cost of PV System, Renewable Energy Program Area

Response	Residential	Commercial
Sample size	*28*	*3*
Yes	18%(5)	33%(1)
No	39%(11)	33%(1)
Don't know/refused	43%(12)	33%(1)

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Awareness of NYSERDA was very high, with 93% of residential respondents and all three commercial respondents being aware of NYSERDA (Table G-42).

Table G-42. Awareness of NYSERDA Prior to Interview, Renewable Energy Program Area

Response	Residential	Commercial
Sample size	*28*	*3*
Yes	93% (26)	100% (3)
No	7% (2)	0% (0)
Don't know/refused	0% (0)	0% (0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents were then asked about their awareness of programs, in general, that promote PV systems. This question was included as a follow-up to respondents' awareness of ARRA funding, to assess whether respondents might have been aware of funding programs more generally, just not the specifics of ARRA. Indeed, awareness of general PV promotion programs was substantially higher than awareness of ARRA, with 71% of residential respondents and two of three (66%) commercial respondents reporting awareness of such programs. This result suggests that the sample was well-informed about solar programs, but not aware of ARRA specifically (Table G-43). This result also suggests that there is a significant gap between awareness of NYSERDA and awareness of PV incentive programs. This could indicate that many customers were more familiar with one, or more, of NYSERDA's energy-efficiency programs but had not encountered information about NYSERDA's solar PV programs.

Table G-43. Awareness of Programs Promoting PV Systems, Renewable Energy Program Area

Response	Residential	Commercial
Sample size	*28*	*3*
Yes	71% (20)	66% (2)
No	25% (7)	33% (1)
Don't know/refused	4% (1)	0% (0)

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Of the 20 residential respondents and two commercial respondents who were aware of programs promoting PV systems, 75% of residential and all commercial respondents indicated that they had received an incentive or rebate from a PV program (Table G-44).

Table G-44. Whether Received Incentive or Rebate From a PV Program, Renewable Energy Program Area

Response	Residential	Commercial
Sample size	*20*	*2*
Yes	75%(15)	100%(2)
No	15%(3)	0%(0)
Don't know/refused	10%(2)	0%(0)

Note: Base is respondents who were aware of a PV program.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Further, of the 26 residential and three commercial respondents who were aware of NYSERDA, 89% of residential and all commercial respondents were aware that NYSERDA helped reduce the cost of their PV system (Table G-45).

Table G-45. Awareness that NYSERDA Helped Reduce Cost of System, Renewable Energy Program Area

Response	Residential	Commercial
Sample size	*26*	*3*
Yes	89%(23)	100% (3)
No	8%(2)	0% (0)
Don't know/refused	4%(1)	0% (0)

Note: Base is respondents who had heard of NYSERDA.

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents then reported whether they had used tax credits or financing to help pay for their PV system. The majority of respondents from both groups indicated that they had, with 75% of residential and all commercial respondents utilizing tax credits or financing (Table G-46).

Table G-46. Whether Respondents Used Tax Credits or Financing to Help Pay for PV System, Renewable Energy Program Area

Response	Residential	Commercial
Sample size	*28*	*3*
Yes	75%(21)	100%(3)
No	25%(7)	0%(0)
Don't know/refused	0%(0)	0%(0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Residential respondents were more likely to use federal or state tax credits than loans to help pay for their PV system, as 81% reported having used federal tax credits and 76% reported having used state tax credits, while only 38% had secured loans. For commercial respondents, all three had utilized state tax credits, while two of the three had utilized federal tax credits and also secured loans (Table G-47).

Table G-47. Tax Credits or Financing Used (Multiple Responses), Renewable Energy Program Area

Type of Tax Credits/Financing	Residential	Commercial
Sample size	*21*	*3*
Federal tax credit	81% (17)	67%(2)
State tax credit	76% (16)	100%(3)
Loan	38% (8)	67%
Other	0% (0)	0%
Don't know/refused	0% (0)	0%

Note: Base is respondents who used tax credits or financing to help pay for system.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Motivation

The next portion of the survey focused on respondents' motivation to install PV systems, with questions about the importance of funding in their installation decision, why they decided to install the system, and how they dealt with the installation process.

Respondents were asked to rate the importance of federal and state tax credits using a scale of 1 to 5, with 1 indicating that it was extremely important and 5 indicating that it was not important at all. Both federal and state tax credits were instrumental in residential and commercials respondent's decision to install their systems. All 17 residential respondents and both commercial respondents who made use of the federal tax credit rated it as extremely important in their decision to install (mean score = 1.0). Similarly, the 16 residential respondents and the three commercial respondents who utilized the state tax credit said the funding was extremely important, with a mean score of 1.1 for residential and 1.0 for commercial respondents (Table G-48).

Table G-48. Importance of Federal and State Tax Credits in Decision to Install System, Renewable Energy Program Area

	Federal		State	
Importance of Tax Credit	**Residential**	**Commercial**	**Residential**	**Commercial**
Sample size	*17*	*2*	*16*	*3*
Mean (Scale 1-5)	1.0	1.0	1.1	1.0
1 Extremely important	100% (17)	100% (2)	88% (14)	100% (3)
2 Somewhat important	0% (0)	0% (0)	13% (2)	0% (0)
3 Neither important nor unimportant	0% (0)	0% (0)	0% (0)	0% (0)
4 Not very important	0% (0)	0% (0)	0% (0)	0% (0)
5 Not at all important	0% (0)	0% (0)	0% (0)	0% (0)
Don't know/refused	0% (0)	0% (0)	0% (0)	0% (0)

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents then reported their reasons for installing their PV system. Most frequently, they reported a desire to reduce energy bills and have energy savings (reported by 39% of residential respondents and all three commercial respondents). This was followed by concern for the environment, cited by 29% of residential respondents and one commercial respondent. Commercial respondents also pointed to reducing their company's carbon footprint and emissions, as well as green marketing/public relations as motivations to install. Residential respondents cited promoting renewable energy and reducing their carbon footprint, among other motivations (Table G-49).

Table G-49. Why Installed System (Multiple Responses), Renewable Energy Program Area

Reason	**Residential**	**Commercial**
Sample size	*28*	*3*
Reduce energy bills/energy savings	39% (11)	100% (3)
Concern for environment	29%(8)	33%(1)
Promote renewable energy/help increase the adoption of renewable energy	11%(3)	0%(0)
Reduce home/company carbon footprint and emissions	7%(2)	33%(1)
It was a no-cost option	4%(1)	0%(0)
To have another power source	4%(1)	0%(0)
Enhance the value of the property	4%(1)	0%(0)
Hedge against future increases in energy prices	0%(0)	0%(0)
Green marketing/public relations	0%(0)	33%(1)
Regulatory requirements or mandate	0%(0)	0%(0)
Don't know/refused	4%(1)	0%(0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

The next area of assessment was how respondents became aware of the opportunity to install their PV system. For residential respondents, the most common source of awareness was a story on the TV, radio, or newspaper, reported by 25%. This was followed by word-of-mouth (18%) and an online resource (11%). Each additional response was only reported by individual residential respondents. This finding seems to support a strategy of maintaining multiple channels of information about future NYSERDA programs.

Two of the commercial respondents reported awareness of the installation opportunity from word-of-mouth, and two learned from brochures or catalogues from a PV dealer/installer. One commercial respondent became aware from an environmental consultant (Table G-50).

Table G-50. How Became Aware of Opportunity to Install PV System (Multiple Responses), Renewable Energy Program Area

Sources of Awareness	Residential	Commercial
Sample size	*28*	*3*
Story on TV/radio/newspaper	25% (7)	0% (0)
Word-of-mouth (e.g., friend, family, neighbor, colleague)	18% (5)	66% (2)
Online	11% (3)	0% (0)
Brochure or catalogue from a PV dealer/installer	4% (1)	66% (6)
NYSERDA Website	4% (1)	0% (0)
Trade show	4% (1)	0% (0)
Seeing PV on other homes	4% (1)	0% (0)
School	4% (1)	0% (0)
Home shows	4% (1)	0% (0)
My job	4% (1)	0% (0)
Home Depot	4% (1)	0% (0)
Environmental consultant	0% (0)	33% (1)
Don't know/refused	7% (2)	0% (0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

After they had found out about the opportunity to install a system, respondents were also asked how they found an installer. The most common answer from residential respondents was word-of-mouth (39%). Other popular sources from residential respondents were the phone book, the internet, and from a Web search (25%). Other residential responses included a brochure or catalogue from a PV dealer/installer, direct contact by a PV installer, and home shows (7% each). Further responses were only mentioned by individual residential respondents (Table G-51). The three commercial respondents found their installers through word-of-mouth, an environmental consultant, and an economic development corporation. This finding suggests that PV installers employ multiple modes of marketing and outreach to potential customers, but that word-of-mouth recommendations from satisfied customers may be the most important marketing tool.

Table G-51. Method for Finding System Installer, Renewable Energy Program Area

Sources	Residential	Commercial
Sample size	*28*	*3*
Word-of-mouth (e.g., friend, family, neighbor, colleague)	39% (11)	33% (1)
Phone book/internet/Web search	25% (7)	0% (0)
Brochure or catalogue from a PV dealer/installer	7% (2)	0% (0)
Direct contact by a PV installer	7% (2)	0% (0)
Home shows	7% (2)	0% (0)
PV installer's Website	4% (1)	0% (0)
Newspaper	4% (1)	0% (0)
Referral from other PV system owner	0% (0)	0% (0)
NYSERDA Website	0% (0)	0% (0)
Environmental consultant	0% (0)	33% (1)
Economic development corporation	0% (0)	33% (1)
Don't know/refused	7% (2)	0% (0)

Note: Total may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Freeridership – End Users' Willingness to Pay and Price Elasticity[9]

Freeridership for PON 1686 was estimated with responses to questions pertaining to end-users' WTP more than the incentivized price for their PV installations, and incorporates a price elasticity analysis. Often utilized in economics and referred to as price elasticity of demand, this technique determines the change in demand that results from a one unit change in price. End-users' WTP for the PV installations was determined by asking respondents if they would have paid for the system at price points above the one they actually paid by moving upward in price in three $400 increments (i.e., $400 more per kW, $800 more per kW, and $1,200 more kW) to determine how much they would have paid without the ARRA-funded incentives.

Freeridership was calculated by using an estimated average full price per kW (based on Program Area records), an average discounted price per kW (based on Program Area records), and an average WTP price (based on survey data). WTP responses were weighted by the capacity of the respondent's PV system. With this method, the average price the respondents were willing to pay is compared to the incentivized price in the following fashion:

Equation 0-1. PON 1686 Freeridership Calculation, Renewable Energy Program Area

$$FR = (\text{average price WTP} - \text{average discounted price}) / (\text{average full price} - \text{average discounted price})$$[10]

[9] Because of the design of PON 1686, end-users may not have been aware that the price of their PV system was reduced by NYSERDA ARRA incentives or of the value of the incentives. WTP questions were used to estimate freeridership rather than a standard batter of freeridership questions because end-users may not have been aware that they were program participants.

Freeridership was estimated separately for residential and commercial respondents.[11]

For residential respondents, the average price respondents said they were willing to pay was $4,752 per kW, while the average incentivized price as $4,632 per kW and the average non-incentivized price was $6,267 per kW, resulting in a freeridership rate of 7% (Table G-52). All three commercial respondents said they were willing to pay more than non-incentivized price of their system, resulting in a freeridership rate of 100%.

The estimate of freeridership for commercial respondents should be viewed very cautiously, as they are contradicted by the PV installers.

Table G-52. Initial Estimates of Freeridership Based on End-User Survey, Renewable Energy Program Area

Sources	Residential	Commercial
Sample size	*19*	*3*
Overall freeridership	**7%**	**100%**

Freeridership – PV Installers

Freeridership was also estimated by PV installers during the in-depth interviews. Four of the six installers interviewed by the Cadmus Team worked with commercial customers. All four commercial installers believed that freeridership was very low or non-existent for their commercial customers, with freeridership estimates ranging from 0% to 29%. In addition, some installers described their commercial customers as being very price sensitive and requiring short (five-year) payback periods. Further, two of the four installers reported that projects were installed approximately two months sooner because of the ARRA funding. The average freeridership score provided by commercial installers was 12%.

There was much less consensus among the three out of six interviewed installers who worked with residential customers, and only one of those three could provide an estimate of freeridership. One installer reported low levels of freeridership and estimated that 25% of the customers were freeriders. A second installer reported that all of the residential systems would have been installed through NYSERDA's Power Naturally Program in absence of ARRA funding, although the systems would have been smaller as a result of having less funding; the installer did not estimate the number of systems that would have been installed in the absence of any subsidy. The third installer could not estimate freeridership. There was general agreement among the residential installers that residential customers are less price-sensitive than commercial customers.

Overall, the Cadmus Team does not recommend estimating freeridership based on the interviews with residential PV installers, since only one of three interviewed installers could provide an estimate.

Freeridership – Final Estimate

The Cadmus Team adjusted the freeridership for commercial end-users based on freeridership estimates provided by the four commercial PV installers. Because only one of the three residential installers could provide an estimate of freeridership, installer interview data were not used to adjust residential freeridership.

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[10] Freeridership was estimated using data from 19 residential respondents. WTP data for the remaining residential respondents was not used because the end-user survey programming erroneously used the full (non-incentivized) price as the base price in their WTP questions.

[11] Because all residential projects were completed Upstate and all commercial projects were completed Downstate, the Cadmus Team did not develop Upstate/Downstate weights for PON 1686.

Final freeridership for commercial respondents was calculated by taking the average of the participants' score (100%) and the installers' score (12%) for an initial score of 56%. Then, because two of four installers said their projects were installed an average of two months sooner because of ARRA funding, the Cadmus Team reduced freeridership by 1/12.[12] This resulted in a commercial freeridership estimate of 51%. No adjustments were made to the residential freeridership value of 7% (Table G-53).

Because of the extremely small sample size of commercial participants, and the contradictory estimates of commercial freeridership provided by the PV installers, the Cadmus Team recommends treating these values as indicative of freeridership, but not using them to estimate net energy generation at this time. The sample size of the residential respondents is also relatively small, suggesting the results should be interpreted cautiously. However, residential freeridership rates are comparable to those found in a recent evaluation of renewable energy programs.[13]

Table G-53. Final Estimates of Freeridership, Renewable Energy Program Area

Sources	Residential	Commercial
End-user estimate	7%	100%
Installer estimate	N/A	12%
Average end-user and installer estimate	N/A	56%
Adjustment, early installation of systems (PV installer estimate)	N/A	1/12
Final freeridership estimate (90% confidence interval)	**7% (90% CI: 0%-17%)**	**51% (N/A)**
Final net of freeridership value (90% confidence interval)	**93% (90% CI: 83%-100%)**	**49% (N/A)**

The Cadmus Team benchmarked this Program Area's freeridership results with results from other studies which evaluated similar programs. In these other studies[14,15] freeridership rates averaged around 0.22. One report calculated freeridership at less than 5% with a NTG close to 1.0 for solar PV measures.[16] The Renewable Energy Program Area commercial freeridership rate of 29% for PON 1686 is on the high end relative to these other programs.

[12] Two installers estimated that their projects were installed approximately two months sooner because of the NYSERDA ARRA program (i.e., 1/6 of a year). Averaging the earlier installations across the four commercial installers yields a value of 1/12.

[13] A recent evaluation of a commercial solar PV program in Oregon estimated freeridership rates of 11% (Research Into Action. *Final Report Fast Feedback Program Rollout: Nonresidential & Residential Program Portfolio*. 2010. http://energytrust.org/library/reports/101231_Fast_Feedback_Rollout.pdf).

A second evaluation of a solar PV program in Wisconsin estimated freeridership rates of 19% for residential participants and 21% for commercial participants (TetraTech. *Renewables: Impact Evaluation CY10 September 2009 through June 2010.* 2011. http://www.focusonenergy.com/files/Document_Management_System/Evaluation/renewablesimpactevaluationcy10_evaluationreport.pdf).

[14] The Cadmus Group, Inc. *WI Focus on Energy Renewables Impact Evaluation Report for Jan-Sep 2009*. 2010.

[15] The Cadmus Group, Inc. *WI Focus on Energy Renewables Impact Evaluation Report.* 2010.

[16] NYSERDA. *End-Use Renewables Market Characterization, Market Assessment and Causality Evaluation.* 2005.

Takeback and Spillover

Next, survey respondents were asked about takeback effects (or the reduction in conservation efforts because of installing a renewable system) and spillover (or renewable generation actions or energy saving actions taken as a result of the Program Area). There is little evidence of widespread takeback effects related to the Renewable Energy Program Area, while there is limited evidence of spillover by residential respondents in the form of energy-efficient equipment installed in their homes or energy-efficient actions taken by respondents (Table G-54). Overall, spillover savings likely nullify, and possibly exceed, takeback effects.

Table G-54. Changes in Energy-Related Behavior Since Installation of System (Multiple Responses), Renewable Energy Program Area

Behavioral Change	Residential	Commercial
Sample size	*28*	*3*
Evidence of any takeback	25% (7)	33% (1)
Spillover: Installed energy-efficient equipment and was strongly influenced by PV system*	18% (5)	0% (0)
Spillover: Adopted any energy-saving actions or behaviors and was strongly influenced by PV system*	50% (14)	0% (0)

* Strong influence was defined as a rating between 7 and 10 on the 10-point scale (a 10 indicates that the PV system was the most influential on their decision to install or purchase high-efficiency equipment).

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Survey respondents were asked about takeback effects, which may reduce some of the renewable system benefit because overall energy use increases. There is little evidence of widespread takeback effects related to the Renewable Energy Program Area.

To assess whether the PV system installation may have led to increased energy consumption, respondents were asked about any changes in their energy-related behavior since the installation of their system. Table G-55 reports potential increases in energy use since the system installation. Across the entire sample, few respondents reported increases in energy consumption. For residential respondents, 14% indicated they had decreased their thermostat settings during the summer and increased their electricity use for plug-in devices. One residential respondent increases their home thermostat settings during the winter, one leaves lights on more frequently, and one installed an additional large piece of electrical equipment. One commercial respondent reported installing more equipment that uses electricity and also increased hot water use (Table G-55).

Table G-55. Takeback: Changes in Energy-Related Behavior Since Installation of System (Multiple Responses), Renewable Energy Program Area

Behavioral Change	Residential	Commercial
Sample size	*28*	*3*
Any change in energy-related behavior	25% (7)	33% (1)
Decreased thermostat settings during summer	14% (4)	0% (0)
Increased use of electricity for plug-in electrical devices	14% (4)	0% (0)
Increased thermostat settings during winter	4% (4)	0% (0)
Left lights on more frequently	4% (1)	0% (0)
Installed additional large piece of electrical equipment	4% (1)	0% (0)
Installed more equipment that uses electricity	0% (0)	33% (1)
Left office equipment on overnight	0% (0)	0 (0%)
Increased hot water use	0% (0)	33% (1)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

To understand the potential influence of the PV installation on takeback behaviors, respondents who reported increases in energy use were asked why they had made the changes. For commercial respondents, it became clear that the PV system had no influence on increased energy consumption. Only one of the three commercial respondents reported changes in energy-related behavior (increased hot water use and installed new equipment), and both of these changes were described as a result of the company growing in size, not the PV system installation.

However, the few residential respondents who reported changes in their energy-related behaviors were influenced by the installation of the PV system. Three residential respondents (11%) specifically reported increased use directly as a result of the PV system. For these respondents, the PV system produced more energy than they had been using, and they preferred to increase their energy usage rather than be credited for excess generation under New York's net metering rules.

- One respondent described their household's decision as follows: "*When looking at how we are currently producing more energy than we are using, we realized that at the end of the year we only get paid back a supply fee and not a delivery fee. It is in our best interest to utilize all that we have. I guess I see it as better to put it to use than get paid pennies for something that would not really be refunded.*"
- A second respondent replied as follows: "*The electricity we used was free electricity. It was an overage produced by our system. We wanted to zero the system out. If we have a surplus, we don't want to give it to the utility company.*"

These sentiments may indicate that some participants are not satisfied with current net metering rules. However, while several respondents reported increasing their energy use, far more respondents reported decreasing their energy usage by installing energy-efficient equipment or adopting energy-efficient behaviors.

Spillover

The survey also asked questions used to make an initial, qualitative assessment of spillover. Respondents were asked if they had installed additional renewable energy capacity, installed energy-efficient equipment, or engaged in energy-saving behaviors since installing their PV system. Overall, there is limited evidence of spillover in the form of energy-efficient equipment installed in respondents' homes or energy-efficient actions taken by respondents. However, spillover may be underestimated and may

increase over time. Spillover was assessed soon after the installation of the PV systems. Often spillover takes more time to occur.

No additional renewable energy capacity had been installed, and 18% of residential respondents and none of the three commercial respondents attributed the installation of energy-efficient equipment to the installation of their PV system. However, about half of all residential respondents reported that they have adopted energy-savings behaviors because of their PV systems, including turning off lights more frequently, decreasing hot water use, and installing energy-efficient light bulbs.

Two residential respondents had considered adding more renewable energy capacity, with one considering adding more solar capacity and a second who had looked into other technologies, such as geothermal and micro combined heat and power. Neither respondent had actually installed more renewable capacity at the time of the survey.

Eleven of 28 residential respondents had installed energy efficient or ENERGY STAR-qualified equipment since having their PV system installed. Types of equipment installed included water heaters (14%), refrigerator/freezers (11%), heat pumps (7%), lighting (7%), and air conditioners, clothes washers, and windows/doors (4% each). One of the three commercial respondents had installed ENERGY STAR-certified lighting (Table G-56).

Respondents were also asked how influential their PV system had been on their decision to install more energy-efficient equipment, on a scale of 0-10 (with 0 indicating that it was not at all influential, and 10 indicating that it was very influential). Of the 11 residential respondents who had installed such equipment, five ranked the PV system as highly influential in that decision (rated between a 7 and a 10 on the 10 point scale). The PV equipment influenced the installation of two water heaters, one heat pump, lighting, and one clothes washer (Table G-56). The one commercial respondent who had installed energy-efficient lighting did not rate the PV installation as influential in that decision.

Table G-56. Energy Efficient or ENERGY STAR-Rated Equipment Installed Since Installation of Solar PV System (Multiple Responses), Renewable Energy Program Area

	Residential		Commercial	
Equipment	**Installed Equipment**	**Strongly Influenced by PV System***	**Installed Equipment**	**Strongly Influenced by PV System***
Sample size	*28*	*28*	*3*	*3*
Installed energy-efficient equipment	39%(11)	18%(5)	33%(1)	0% (0)
Water heater	14%(4)	7%(2)	0% (0)	0% (0)
Refrigerator/freezer	11%(3)	0% (0)	0% (0)	0% (0)
Heat pump	7%(2)	4%(1)	0% (0)	0% (0)
Lighting	7%(2)	4%(1)	33%(1)	0% (0)
Air conditioner	4%(1)	0% (0)	0% (0)	0% (0)
Clothes washer	4%(1)	4%(1)	0% (0)	0% (0)
Windows/doors	4%(1)	0% (0)	0% (0)	0% (0)
None	61%(17)	N/A	66%(2)	N/A
Don't know/refused	0% (0)	N/A	0% (0)	N/A

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

* Strong influence was defined as a rating between 7 and 10 on the 10-point scale (a 10 indicates that the PV system was the most influential on their decision to install or purchase high-efficiency equipment).

Respondents then reported whether they had received a rebate or tax credit for the additional ENERGY STAR equipment they had installed (Table G-57). Of the 11 residential respondents who had installed ENERGY STAR equipment, seven (64%) had received a rebate or tax credit to help finance at least one piece of equipment. The one commercial respondent who had installed energy-efficient lighting also received a rebate.

Table G-57. Whether Received Rebate or Tax Credit for Additional Equipment Installed (Multiple Responses), Renewable Energy Program Area

Type of Equipment Rebated/Tax Credit	Residential	Commercial
Sample size	*11*	*1*
Received rebate or tax credit	64% (7)	100% (1)
Water heater	75% (8)	0% (0)
Refrigerator/freezer	33% (4)	0% (0)
Heat pump	100% (11)	0% (0)
Lighting	0% (0)	100% (1)
Air conditioner	100% (11)	0% (0)
Clothes washer	0% (0)	0% (0)
Windows/doors	0% (0)	0% (0)
Did not receive rebate or tax credit	36% (4)	0% (0)
Don't know/refused	0% (0)	0% (0)

Note: Base is respondents who installed ENERGY STAR equipment since having the solar PV system installed.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

The residential respondents received financing from a number of sources, including federal and state tax credits and a Central Hudson credit (Table G-58). The one commercial respondent used a ConEdison rebate to help pay for the installed lighting.

Table G-58. Rebate or Tax Credit Program Used for Additional Energy Savings Measures (Multiple Responses), Renewable Energy Program Area

Sources	Residential	Commercial
Sample size	*7*	*1*
Federal tax credit	43%(3)	0% (0)
State tax credit	29%(2)	0% (0)
Central Hudson	29%(2)	0% (0)
ConEdison rebate	0%(0)	100% (1)
Don't know/refused	29%(2)	0% (0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

As a final survey measure, respondents described any energy saving actions they had taken since the installation of their PV system. These behaviors provided a contrasting view of the energy consuming behaviors reported earlier. Although commercial respondents did not report any energy saving actions since the installation of their systems, residential respondents did. The most common energy-saving action reported was turning off lights more frequently (32%), followed by decreasing the amount of electrical equipment plugged in (18%). Decreasing hot water use and installing energy-efficient light bulbs were also reported by residential respondents (11% each). Other behaviors were not reported with

great frequency, and all answers are shown in Table G-59. Overall, half of all respondents reported that at least one of their energy saving actions was strongly influenced by the installation of their PV systems (assessed on a scale of 1-10).

Table G-59. Energy Saving Actions Taken Since Installation of Solar PV System (Multiple Responses), Renewable Energy Program Area

	Residential (n=28)		Commercial (n=3)	
Actions/behaviors	**Adopted Behavior**	**Strongly Influenced by PV System***	**Adopted Behavior**	**Strongly Influenced by PV System***
Adopted any energy-saving actions or behaviors	64%(18)	50%(14)	0%(0)	0%)
Turn off lights more frequently	32%(9)	14%(4)	0%(0)	0%)0
Decrease amount of electrical equipment plugged in	18%(5)	7%(2)	0%(0)	0%(0)
Decrease hot water use	11%(3)	7%(2)	0%(0)	0%(0)
Installed energy-efficient light bulbs	11%(3)	4%(1)	0%(0)	0%(0)
Increase thermostat settings in summer	4%(1)	0%(0)	0%(0)	0%(0)
Decrease thermostat settings in winter	4%(1)	0%(0)	0%(0)	0%(0)
Turn furnace off during the day	4%(1)	4%(1)	0%(0)	0%(0)
Installed wood burning stove	4%(1)	0%(0)	0%(0)	0%(0)
Shut doors in the summer	4%(1)	0%(0)	0%(0)	0%(0)
Installed energy-efficient heater	4%(1)	4%(1)	0%(0)	0%(0)
Turn off water heater when not home	4%(1)	4%(1)	0%(0)	0%(0)
Use fewer appliances	4%(1)	0%(0)	0%(0)	0%(0)
Installed ceiling fans	4%(1)	4%(1)	0%(0)	0%(0)
Installed insulation between every floor	4%(1)	4%(1)	0%(0)	0%(0)
None	36%(10)	N/A	100%(3)	N/A
Don't know/refused	0%(0)	N/A	0%(0)	N/A

* Strong influence was defined as a rating between 7 and 10 on the 10-point scale (a 10 indicates that the PV system was the most influential on their decision to adopt the reported behavior or action).

Note: The numbers after the parentheses are unweighted frequencies, while the percentages reflect weighted data

G5. TRANSPORTATION PROGRAM AREA

This appendix summarizes the awareness, motivations, economic factors, alternative funding sources, and spillover characteristics of Transportation Program Area project respondents.[17] While this information is presented to support the gross and net savings estimates, the analyses discussed in the main document refers to the results presented below, as they explain freeridership and spillover effects from participating in this NYSERDA ARRA-funded program area.

[17] Transportation projects were funded through the Clean Fleets Program (via SEP within RFP 1613).

Transportation Program Area Awareness and Motivation to Participate

The five interviewed respondents learned about the Transportation Program area primarily through outreach by NYSERDA staff (three responses) or through a civic or municipal group or task force (two responses; Table G-60).

Table G-60. How Participants Heard About the Transportation Program Area (Multiple Responses)

Sources of Awareness	Overall
Responses	*7*
Through NYSERDA's FlexTech Program	0
Through participating in another NYSERDA program	1
The NYSERDA RFP	1
Program area marketing	0
Outreach by NYSERDA staff	3
Contractor/installer/enginnering or architechtural firm	0
NYSERDA Website	0
Story in the media	0
Word-of-mouth (colleague, friend, family)	0
Civic/municipal group or task force	2
Don't know	0
Refused	0

Respondents were asked why they decided to apply for NYSERDA ARRA funds. As shown in Table G-61, six responses included not being able to afford the project without funding and/or the wish to embrace green technology. One respondent instituted the project as a pilot.

Table G-61. Why Applied for NYSERDA Funds, Transportation Program Area (Multiple Responses)

Reason	Overall
Responses	*9*
Could not find funding from other sources	1
Contractor suggested I apply	0
Other funding sources required to match or leverage funds	0
Thought chances of getting funded were good	0
Could not afford to do the project without funding	3
Embracing green technology	3
Pilot project	1
Encourage similar projects to move forward	1
Don't know	0
Refused	0

All of the respondents surveyed were aware at the time of the interview that the NYSERDA ARRA-funding their organization received for the project was provided by the federal government through ARRA.

Respondents were then asked how the fact that the funds were provided by ARRA affected their decision to apply and participate. Table G-62 shows that four out of five respondents said the ARRA association was not at all a factor in their decision to apply. One respondent reported that ARRA involvement was a critical positive factor in deciding to apply.

Table G-62. Influence of ARRA Funding on Decision to Apply for NYSERDA Funds, Transportation Program Area

Influence	Overall
Sample size	*5*
Critical negative factor	0
Somewhat of a negative factor	0
Not at all a factor	4
Somewhat of a positive factor	0
Critical positive factor	1

The effect of the NYSERDA ARRA fund timing on respondents' decisions to apply was gauged by asking, "*To what extent was your decision to apply for funds from NYSERDA affected by* when *the funds would be available to you?*" All respondents said that timing was not a factor when deciding to apply.

Table G-63 shows whether respondents had participated in a previous NYSERDA Transportation Program area. All respondents had not or did not know if they had previously participated.

Table G-63. Previous Participation in a NYSERDA Transportation Program Area

Influence	Overall
Sample size	*5*
Yes	0
No	3
Don't know	2
Refused	0

Alternative and Additional Funding

The survey included a number of questions about the funding sources for respondents' transportation projects, including whether they had attempted to secure financing for the project before they applied for NYSERDA ARRA funds, whether those attempts were successful, and how the previously secured funds were used.

No respondent had previously attempted to secure financing for their transportation projects.

Table G-64 shows the likelihood that respondents would have performed some type of transportation project if the NYSERDA ARRA funds had not been available. Respondents rated the likelihood using a scale from 1 (indicating that it was not at all likely) to 5 (indicating that it was very likely). Four out of

five respondents reported that they were likely to have performed some sort of project. One respondent indicated they were not at all likely to have performed a project without the NYSERDA ARRA funding.

Table G-64. Likelihood of Performing Transportation Program Area Project in Absence of NYSERDA Funds

Likelihood	Overall
Sample size	*5*
Mean (scale 1-5)	3.60
1 Not at all likely	1
2 Somewhat unlikely	0
3 Neither likely nor unlikely	0
4 Somewhat likely	3
5 Very likely	1

Respondents were asked whether the NYSERDA ARRA funding allowed them to divert funds that had been budgeted for the current transportation project(s) to other projects. No respondent diverted monies to other projects.

Spillover

Respondents were asked a series of questions about the influence of the Transportation Program area on any additional energy-saving actions they have incorporated at their site.

As shown in Table G-65, three respondents indicated that participation in the program area influenced their organization to incorporate additional energy-saving actions. Two respondents were not influenced to implement additional measures because of participating in the program area.

Table G-65. Whether Transportation Program Area Influenced Respondents to Implement Additional Actions to Save Energy

Response	Overall
Sample size	*5*
Yes	3
No	2
Don't know/refused	0

The specific energy-efficient actions taken by the three respondents who were influenced by the Transportation Program area included implementing efficiency retrofits (lighting), changing their behavior (planning out mileage and turning off lights), and utilizing the vehicle fleet more efficiently (Table G-66).

Table G-66. Additional Energy Saving Actions, Transportation Program Area

Action	Overall
Sample size	*3*
Energy efficiency retrofits: lighting	1
Energy efficiency behaviors: planning out mileage, turning off lights	1
Utilizing vehicle fleet efficiently	1

Base is respondents who indicated that the program area influenced them to take additional energy-saving actions.

Program area participants who said that participating in the Transportation Program area influenced them to take additional energy-saving actions were asked to rate the extent of this influence on a scale from 1 (indicating that it was no influence at all) to 5 (indicating that it had a great deal of influence). Two respondents said there was some influence, while one respondent reported that the program area had a great deal of influence (Table G-67).

Table G-67. Influence of Transportation Program Area on Additional Energy-Saving Actions

Importance	Overall
Sample size	*3*
Mean (scale 1-5)	4.33
1 No influence at all	0
2 Little influence	0
3 Neutral	0
4 Some influence	2
5 A great deal of influence	1

Base is respondents who indicated that the Transportation Program area influenced them to implement additional energy-saving actions.

Demographics

The five Transportation Program area participants interviewed represented municipal and educational institutions.

G6. ENERGY CONSERVATION STUDIES PROGRAM AREA

This appendix summarizes the awareness, motivations, economic factors, alternative funding sources, freeridership, spillover, and firmographic characteristics of Energy Conservation Studies Program Area respondents. While this information is presented to support the gross and net savings estimates, the analyses discussed in the main document at times refers to the results presented below, as they may help to explain freeridership and spillover effects of participating in the program area.

Program Area Awareness and Motivation to Participate

Respondents learned about the Energy Conservation Studies Program area primarily through a contractor, installer, or the engineering or architectural firm that either performed the study or advised them about it (68%) (Table G-68).[18]

Table G-68. How Participants Heard About Energy Conservation Studies Program Area (Multiple Responses)

Sources of Awareness	Overall*
Sample size	*38*
Through NYSERDA's FlexTech Program	0
Through participation in another NYSERDA program	6% (3)
The NYSERDA RFP	0
Program area marketing	10% (10)
Outreach by NYSERDA staff	3% (4)
Contractor / installer /enginnering / architechtural firm	68% (24)
NYSERDA Website	0% (0)
Story in the media	0% (0)
Colleague, friend, or family (word-of-mouth)	12% (4)
Seminar	1% (1)
Don't know	0% (0)
Refused	0% (0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents were asked why they decided to apply for NYSERDA ARRA funds to implement the study. As shown in Table G-69, 43% of the respondents applied because they would not have been able to afford the study without funding. Sixteen percent of respondents reported that their contractor suggested they apply for the program area.

[18] All responses were weighted unless otherwise noted.

Table G-69. Why Applied for NYSERDA ARRA Funds, Energy Conservation Studies Program Area

Reason	Overall*
Sample size	*38*
Could not find funding from other sources	7% (2)
Contractor suggested I apply	16% (6)
Other funding sources required to match or leverage funds	2% (2)
Thought chances of getting funded were good	14% (4)
Could not afford to do the study without funding	43% (13)
Required by state law to complete audits	4% (7)
Looking for projects to save us energy / money	14% (4)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

As shown in Table G-70, 76% of respondents were aware at the time of the interview that the funding their organization received from NYSERDA for the study was provided by the federal government through ARRA 2009.

Table G-70. Awareness that NYSERDA Funding was Provided by ARRA, Energy Conservation Studies Program Area

Aware that funding received was provided by ARRA?	Overall*
Sample size	*38*
Yes	76% (28)
No	18% (9)
Don't know	6% (1)
Refused	0% (0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents who were aware at the time of the interview that the NYSERDA funding was provided by ARRA were then asked how the fact that the funds were provided by ARRA affected their decision to apply for NYSERDA funds. Table G-71 shows that 35% of the respondents reported that the involvement of ARRA was a positive factor in deciding to apply. Approximately half of the respondents (49%) cited that ARRA was not at all a factor in their decision to apply.

Table G-71. Influence of ARRA Funding on Decision to Apply for NYSERDA Funds, Energy Conservation Studies Program Area

Influence	Overall*
Sample size	*29*
Critical negative factor	0
Somewhat of a negative factor	15% (2)
Not at all a factor	49% (10)
Somewhat of a positive factor	3% (3)
Critical positive factor	32% (14)

Base is respondents who were aware that NYSERDA funding was provided by ARRA.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

The effect of the timing of the NYSERDA ARRA funds on respondents' decisions to apply was gauged by asking, "*To what extent was your decision to apply for funds from NYSERDA affected by* when *the funds would be available to you?,*" as seen in (Table G-72). More than half (51%) of the respondents reported that the timing of the NYSERDA ARRA funds was a positive factor when considering applying.

Table G-72. Influence of Timing of NYSERDA Funds on Decision to Apply, Energy Conservation Studies Program Area

Influence	Overall*
Sample size	*38*
Critical negative factor	0
Somewhat of a negative factor	12% (2)
Not at all a factor	37% (12)
Somewhat of a positive factor	20% (13)
Critical positive factor	31% (11)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Economic Factors

The survey included a number of questions about the funding sources for respondents' conservation studies.

A series of questions asked respondents about whether they had attempted to secure financing for the project they completed through the NYSERDA ARRA-funded program area before they applied for the funds, as well as whether those attempts were successful and how they used the previously secured funds.

Table G-73 shows that 19% of respondents had previously attempted to secure financing for the study, while 81% had not.

Table G-73. Whether Respondents had Previously Attempted to Secure Financing for Energy Conservation Study

Before applying for NYSERDA funds, had you attempted to secure financing for this study?	Overall*
Sample size	*38*
Yes	19% (12)
No	81% (26)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Of respondents who attempted to obtain funding for the project, 60% were successful in securing at least some other financing before applying for the NYSERDA ARRA funds (Table G-74).

Table G-74. Whether Respondents Successfully Secured Financing for Energy Conservation Project

Had you successfully secured at least some other financing for this project before applying for the NYSERDA funds?	Overall*
Sample size	*12*
Yes	60% (9)
No	40% (3)

Base is respondents who had attempted to secure financing before applying to NYSERDA.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Table G-75 shows how the respondent used the funds they obtained before applying to the program area. Thirty-eight percent who secured prior funds used them to help defray part of the study cost. Fifty-four percent used the funds for a sewer repair project, while another 8% upgraded a sprinkler system.

Table G-75. How Previously Secured Funds Were Used, Energy Conservation Studies Program Area

Uses of Funds	Overall*
Sample size	*9*
To pay for part of Study cost	38% (7)
Declined funds before receiving NYSERDA funds	0% (0)
Declined funds after receiving NYSERDA funds	0% (0)
Lost the funds	0% (0)
Have not used previously secured funds yet	0% (0)
Sewer repair project	54% (1)
Sprinkler upgrade project	8% (1)

Base is respondents who successfully secured at least some financing before applying to the program area.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

None of the respondents surveyed lost or declined funds.

Alternative and Additional Funding

Table G-76 shows the likelihood that respondents would have performed some type of conservation study, even one of a lower quality, if the NYSERDA ARRA funds had not been available. Respondents rated the likelihood using a scale from 1 (indicating it was not at all likely) to 5 (indicating that is was very likely). Fifty-five percent of respondents reported that they were likely to have performed some sort of study with ARRA funds, even if it was of lower quality.

Table G-76. Likelihood of Performing Study of Any Quality in Absence of NYSERDA Funds, Energy Conservation Studies Program Area

Likelihood	Overall*
Sample size	*38*
Mean (scale 1-5)	3.16
1 Not at all likely	17% (8)
2 Somewhat unlikely	27% (7)
3 Neither likely nor unlikely	0% (0)
4 Somewhat likely	32% (15)
5 Very likely	23% (8)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents who indicated that they would have performed a study in the absence of the NYSERDA ARRA funds were then asked the likelihood that the study would have been of at least the same quality as the one that they performed using NYSERDA ARRA funds. Almost two out of three respondents (61%) reported that is was not at all likely they would have performed a study of at least the same quality (Table G-77).

Table G-77. Likelihood of Performing Study of Same Quality in Absence of NYSERDA Funds, Energy Conservation Studies Program Area

Likelihood	Overall*
Sample size	*38*
Mean (scale 1-5)	1.87
1 Not at all likely	61% (15)
2 Somewhat unlikely	12% (2)
3 Neither likely nor unlikely	8% (3)
4 Somewhat likely	15% (14)
5 Very likely	3% (4)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Table G-78 shows whether the NYSERDA ARRA funds caused respondents to conduct the study earlier than they would have without the program area. Almost three-quarters of respondents (71%) conducted the study earlier than they otherwise would have, averaging one year and four months earlier.

Table G-78. Influence of NYSERDA Funds on Timing of Energy Conservation Study

Did NYSERDA funds for the study cause you to conduct the study earlier than would have without funds?	Overall*
Sample size	*38*
Yes	71% (29)
No	29% (9)
If Yes, How Much Earlier Mean (years, months)	1.31

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents were asked whether the NYSERDA ARRA funding allowed them to divert funds that had been budgeted for the study for other projects in need of financing. Table G-79 illustrates that 36% of respondents were able to divert monies to other projects.

Table G-79. Whether NYSERDA Allowed Respondent to Divert Funds to Other Projects, Energy Conservation Studies Program Area

Did NYSERDA allow you to divert funds budgeted for this study to go to other projects?	Overall*
Sample size	*37*
Yes	36% (17)
No	64% (20)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Of the respondents who said that NYSERDA ARRA funding allowed them to divert funds to other projects, 54% said that it was not at all likely that they would have diverted these funds to other projects if the NYSERDA ARRA funds had not been available (Table G-80).

Table G-80. Likelihood of Diverting Internal Funds to Other Projects in Absence of NYSERDA Funds, Energy Conservation Studies Program Area

Likelihood	Overall*
Sample size	*17*
Mean (scale of 1 to 5)	2.35
1 Not at all likely	54% (11)
2 Somewhat unlikely	5% (2)
3 Neither likely nor unlikely	18% (1)
4 Somewhat likely	0% (0)
5 Very likely	24% (3)

Base is respondents who said that NYSERDA funding allowed them to divert other funds.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents who were allowed to divert internal funds to other projects were asked whether any of those diverted funds were used to pay for additional renewable energy or energy-efficiency projects (Table G-

81). Overall, 77% of respondents said the diverted funds were not used for financing other renewable or energy-efficient projects.

Table G-81. Whether Diverted Funds Financed Other Renewable Energy or Energy Efficiency Projects, Energy Conservation Studies Program Area

Did any of these diverted funds finance the installation of additional renewable energy or energy-efficiency projects?	Overall*
Sample size	*16*
Yes	23% (3)
No	77% (13)

Base is respondents that said NYSERDA funding allowed them to divert funds.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Three respondents reported utilizing the diverted funds for energy-efficient lighting projects (Table G-82). These respondents did not receive other funding from NYSERDA or another utility program area to finance their projects.

Table G-82. Types of Renewable Energy or Energy-Efficiency Projects Financed by Diverted Funds, Energy Conservation Studies Program Area

Types of Projects	Overall*
Sample size	*3*
Solar photovoltaic (PV)	0% (0)
Solar hot water	0% (0)
Solar thermal	0% (0)
Biomass boiler	0% (0)
Wind turbine	0% (0)
Energy-efficient lighting	100% (3)
Energy-efficient heating system	0% (0)
Energy-efficient cooling system	0% (0)
Energy-efficient hot water system	0% (0)
Insulation	0% (0)
Weatherization/envelope	0% (0)
Other	0% (0)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents who did not use the diverted funds for renewable energy or energy-efficiency projects reported they either spent the funds on other capital improvement projects (79%) or on additional studies (21%; Table G-83).

Table G-83. How Diverted Funds were Used, Energy Conservation Studies Program Area

Uses of Diverted Funds	Overall*
Sample size	*13*
Other capital improvement projects	79%(6)
Staff retention	0% (0)
New staff hires	0% (0)
Additional studies	21%(7)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Freeridership

The survey included a series of questions used to assess respondents' actions if they had not participated in the NYSERDA ARRA Energy Conservation Studies Program area, including their plans prior to participating and the influence of the program area on their decision to install measures recommended by the energy conservation study.

As shown in Table G-84, prior to participating in the NYSERDA ARRA program area, 49% of respondents had planned to install at least some of the energy efficiency or demand measures, or renewable or transportation measures, that were recommended by the Energy Conservation Studies Program area report.

Table G-84. Prior Plans to Install Similar System, Energy Conservation Studies Program Area

Before participating, were you planning to install any of the recommended measures?	Overall*
Sample size	*35*
Yes	49% (16)
No	44% (18)
Possibly	7% (1)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

The survey presented a list of statements describing the process of planning to install the recommended measures. Respondents were asked to indicate which statement best described their plans before they participated in the NYSERDA ARRA program area. Table G-85 shows that almost one-third of respondents (27%) indicated that they "*had preliminary, internal discussions but no plans and no contact with a vendor, contractor, or installer*" regarding any of the recommended measures. Sixteen percent of respondents reported they "*had identified specific equipment/measures and models but budget didn't allow completion of a project.*"

Table G-85. Plans to Implement Measures Prior to Participation, Energy Conservation Studies Program Area

Planning Process Steps	Overall*
Sample size	*17*
Had preliminary, internal discussions but no plans and no contact with a vendor, contractor, or installer.	27% (4)
Had taken initial steps toward considering the equipment/measures, such as requesting information from or discussing options with a vendor, contractor, or installer.	28% (4)
Had in-depth discussions of specific types of equipment/measures, including positive and negative attributes and costs.	5% (3)
Had identified specific equipment, measures, and models but had not begun the budgeting process.	24% (2)
Had identified specific equipment, measures, and models but budget did not allow completion of project.	16% (4)
Had indentified specific equipment, measures, and models and incorporated project into budget.	0% (0)
Other	0% (0)

Base is respondents who planned to install measures before participating in the NYSERDA ARRA program area.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents were then asked how the NYSERDA ARRA program area and funding influenced their decision to implement high-efficiency measures at their site. Presented with a list of statements describing the influence, respondents were asked to choose the statement that best indicated the effect of the program area on their decision process. As shown in Table G-86, the program area and funding had an influence on all of the respondents when deciding to install high-efficiency measures. Forty-seven percent of respondents claimed that the NYSERDA ARRA program area and funding was the primary reason that they has the system installed.

Table G-86. Influence of Energy Conservation Studies Program Area on Decision to Install High-Efficiency Measures*

Description of Influence	Overall**
Sample size	*27*
No influence; the same type and capacity system would have been installed without program area.	0% (0)
The NYSERDA program area funding helped in making the final decision on the system that had already been thoroughly considered.	3% (3)
The NYSERDA program area and funding helped in choosing to install a system that had been discussed but not thoroughly considered.	21% (6)
The NYSERDA program area funding was a major driver in the decision to install the system.	30% (8)
The NYSERDA program area funding was the primary reason that the system was installed.	47% (10)

* Respondents who planned to install measures prior to the study and MAR4 (measure adoption rate respondents) were asked the remaining freeridership battery of questions.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

When asked how important the program area was in their decision to incorporate high-efficiency measures at the site, on a scale from 1 (indicating that is was not at all important) to 5 (indicating is was very important), 98% of respondents indicated that it was somewhat or very important, while only 1% said it was somewhat unimportant or not at all important (Table G-87).

Table G-87. Importance of Energy Conservation Studies Program Area in Decision to Incorporate High Efficiency Measures

Importance	Overall*
Sample size	*27*
Mean (scale 1-5)	4.59
1 Not at all important	0% (0)
2 Somewhat unimportant	1% (1)
3 Neither important nor unimportant	1% (1)
4 Somewhat important	37% (8)
5 Very important	61% (17)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents were asked to estimate the likelihood that they would have installed the same high level of efficiency equipment or measure, at the same time, if they had not received the Energy Conservation Study Program area report or recommendations. Likelihood was indicated using a scale of 0% (indicating that they definitely would not have installed the measure with the same level of efficiency or capacity/rating) to 100% (indicating they definitely would have installed the measure with the same level of efficiency or capacity/rating). Table G-88 shows that the almost one-quarter of the respondents (24%) would not have installed measures with the same high level of efficiency, whereas only 3% indicating they definitely would have.

Table G-88. Likelihood of Installing Same Efficiency Measures in Absence of Energy Conservation Studies Program Area

Percent Likelihood (0-100%)	Overall*
Sample size	*27*
Mean percent likelihood	32%
0%	24% (10)
1-99%	36% (7)
100%	3% (3)
Don’t know/refused	36% (7)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Table G-89 shows respondents’ estimates of the share of efficiency measures they would have installed without the NYSERDA ARRA funds. More than two-thirds of respondents indicated they would not have installed the measures without the program area recommendations (36%), whereas only 4% of the respondents indicated they would have.

Table G-89. Likely Percent of Efficiency Measures Installed in Absence of Energy Conservation Studies Program Area

Percent of Efficiency Measures (0-100%)	Overall*
Sample size	*12*
Mean percent	43%
0%	36% (7)
1-99%	60% (4)
100%	4% (1)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents then estimated the percent of energy savings they achieved with the newly installed measures that would have been achieved anyway (i.e., without the Energy Conservation Study Program area recommendations). For example, an estimate of 50% means that half of the extra savings from the high-efficiency equipment would have been achieved anyway. They were asked to provide an estimate of the lower bound, upper bound, and best estimate for these potential savings. As shown in Table G-90, the overall lower bound of estimated savings is reported to be 29%, with 51% for an upper bound and 40% as the overall best estimate of energy savings that would have been achieved.

Table G-90. Likely Percent of Energy Savings Achieved in Absence of Energy Conservation Studies Program Area

	Lower Bound	Upper Bound	Best Estimate
	Overall*	Overall*	Overall*
Sample size	*19*	*19*	*19*
Mean percent	29%	51%	40%
0%	10% (6)	10% (6)	10% (6)
1-20%	47% (4)	15% (1)	45% (3)
21-40%	4% (2)	30% (2)	1% (1)
41-60%	34% (4)	4% (2)	8% (4)
61-80%	2% (1)	7% (3)	30% (2)
81-99%	0% (0)	30% (2)	0% (0)
100%	4% (2)	6% (3)	6% (3)

Note: Columns may not sum to 100% due to rounding.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Spillover

Respondents were asked a series of questions about the influence of the program area on any energy-efficiency measures they might have had incorporated at their site that were not specifically recommended by the energy conservation study.

As shown in Table G-91, 40% of respondents indicated that the program area had influenced their organization to incorporate additional energy-efficiency measures at their site that had not been recommended by the energy conservation study or by any other NYSERDA program.

Table G-91. Energy Conservation Studies Program Area Influenced Implementation of Additional Energy-Efficiency Measures Not Recommended in Study

Did experience with the program area influence your organization to incorporate additional energy-efficiency measures that had not been recommended by the program area?	Overall*
Sample size	*37*
Yes	40% (17)
No	60% (20)

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents indicating they were influenced to considered installing a dehumidification system (the most frequently mentioned incorporated measure at 32%) while other respondents mentioned an increase in the awareness of "vampire" drain on electricity[19], installation of a packaged thermal air conditioning (PTAC) unit, and installation of variable frequency drives (VFDs) as additional energy savings measures they incorporated (19% each; Table G-92).

Table G-92. Additional Energy-Efficiency Measures Incorporated Since Energy Conservation Study

Action	Overall*
Sample size	*16*
Improve plumbing	5% (2)
Investigate installing dehumidification system	32% (8)
Increased awareness of "vampire" drain on electricity	19% (1)
Install proximity sensor for restroom fan	3% (1)
Install PTAC unit	19% (1)
Fund additional studies	3% (1)
VFD's for mechanical equipment	19% (1)
Replace roof	3% (1)

Note: Total may not sum to 100% due to rounding.

Base is respondents who indicated that the program area influenced them to implement measures that were not recommended by the study.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

When respondents were asked if they took any other additional actions, 49% mentioned they were planning to install additional energy-savings measures. Twenty-four percent of respondents reported they were encouraging staff members to take additional energy-savings actions (Table G-93).

[19] "Vampire" drain refers to the electric power consumed by electronic and electrical appliances while they are switched off (but are designed to draw some power) or in a standby mode.

Table G-93. Additional Energy-Related Actions Taken Since Energy Conservation Study

Action	Overall*
Sample size	*13*
Encouraged staff members to take energy-savings actions	24% (1)
Installed energy-savings measure	49% (2)
Thinking about other easy actions to improve efficiency	6% (2)
Created list of maintenance and operations opportunitites for energy-savings measures	17% (7)
Funded additional studies for other buildings	4% (1)

Base is respondents who indicated that the program area influenced them to implement measures not recommended by the study.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies.

As shown in Table G-94, only 16% of the additional actions taken by respondents were addressed in the energy conservation study.

Table G-94. Whether the Additional Energy-Related Actions Were Addressed in the Energy Conservation Study

Action	Overall*
Sample size	*17*
Yes	16% (1)
No	84% (16)

Base is respondents who indicated that the program area influenced them to implement additional measures that were not recommended by the study.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Table G-95 shows that eight respondents who took additional energy-savings actions were able to estimate the value of the expected energy savings. The respondents reported they would save, on average, $83,808 annually from the additional energy-savings actions. Another eight respondents did not know what the potential savings might be.

Table G-95. Amount Expecting to Save Annually from Additional Energy-Related Actions Taken Since Energy Conservation Study

Action	Overall*
Sample size	*8*
Mean dollar amount	$83,808
$1-100,000	58% (1)
$100,001-200,000	42% (7)
More than $200,000	0% (0)

Base is respondents who indicated that the program area influenced them to implement measures that were not recommended by the study.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Respondents were influenced to a great degree by participating in the Energy Conservation Studies Program area to take on additional energy-savings actions. All of the respondents said there was some influence, while 68% of respondents indicated that participating in the program area had a great deal of influence on their decision to take additional energy-related actions (Table G-96).

Table G-96. Influence that Participating in the Energy Conservation Studies Program Area had on Decision to Take Additional Energy-Related Actions

Importance	Overall*
Sample size	*16*
Mean (scale 1-5)	4.68
1 No influence at all	0% (0)
2 Little influence	0% (0)
3 Neutral	0% (0)
4 Some influence	32% (8)
5 A great deal of influence	68% (8)

Base is respondents who indicated that the program area influenced them to implement measures that were not recommended by the study.

Note: The percentages reflect weighted data numbers, the numbers inside the parentheses are unweighted frequencies

Appendix H:

DEMOGRAPHICS

H1. Appliance Rebate Program Area

H2. Energy Code Program Area

H3. Energy-Efficiency Program Area

H4. Renewable Energy Program Area

PON 1613 Demographics

PON 1686 Commercial End-User Demographics

PON 1686 Residential End-User Demographics

H5. Transportation Program Area

H6. Energy Conservation Studies Program Area

H1. APPLIANCE REBATE PROGRAM AREA

Table H-1 shows that most respondents of the Appliance Rebate Program Area (85%) live in a single family detached home. The Upstate participants (94%) were significantly more likely than the Downstate participants (66%) to live in a single family detached home, and were less likely to live in an apartment building (1% versus 29%).

Table H-1. Type of Home of Appliance Rebate Program Area Respondents

Type of Home	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Single family detached house	85%	94%*	66%
Single family attached house (townhouse, row house, or duplex)	2%	2%	3%
Apartment building with 2-4 units	7%	1%*	19%
Apartment building with 5 or more units	3%	< 1%*	10%
Condo	< 1%	0%*	1%
Mobile home or house trailer	1%	1%*	0%
Don't know/refused	1%	1%	1%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Note: Totals may not equal 100% due to rounding.

Table H-2 shows that while the majority of respondents own their home (95%), the Upstate participants are significantly more likely to own their home than the Downstate participants (98% versus 89%).

Table H-2. Homeownership Status of Appliance Rebate Program Area Respondents

Ownership	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Own	95%	98%*	89%
Rent/lease	4%	< 1%*	11%
Don't know/refused	1%	2%*	0%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Note: Totals may not equal 100% due to rounding.

Nearly all of the respondents (98%) live in their home year-round (Table H-3).

Table H-3. Permanent or Seasonal Residency of Appliance Rebate Program Area Respondents

Residency	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Permanent residence	98%	98%	99%
Seasonal residence	1%	1%	1%
Don't know/refused	1%	1%*	0%

* Statistically different between Upstate and Downstate at the 90% confidence level.

As shown in Table H-4, the majority of respondents use gas to heat their hot water (61%), with Downstate respondents being more likely than Upstate respondents to do so (66% versus 58%).

Table H-4. Type of Hot Water Heating for Appliance Rebate Program Area Respondents

Type	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Gas	61%	58%*	66%
Electric	15%	19%	5%
Indirect through oil	17%	16%*	20%
Solar	< 1%	< 1%	< 1%
Tankless/instant	1%	1%	< 1%
Heat pump	< 1%	< 1%	0%
Coal	< 1%	0%	1%
Oil	< 1%	< 1%	1%
Propane	1%	2%	0%
Other	1%	1%	1%
Don't know/refused	4%	3%*	6%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Note: Totals may not equal 100% due to rounding.

As shown in Table H-5, the Downstate respondents have attained higher average levels of education than the Upstate respondents; the Downstate group is more likely to have a bachelor's degree (26% versus 18%) or a graduate/professional degree (24% versus 14%).

Table H-5. Highest Level of Education of Appliance Rebate Program Area Respondents

Degree Attained	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Less than high school	1%	1%	1%
High school graduate (includes GED)	23%	25%*	18%
Technical or trade school graduate	3%	3%	2%
Two year college graduate	10%	11%	8%
Some college, no degree	14%	13%	15%
Bachelor's degree	21%	18%*	26%
Some graduate or professional school	8%	9%	4%
Graduate or professional degree	17%	14%*	24%
Don't know/refused	4%	5%*	2%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Note: Totals may not equal 100% due to rounding.

Three-quarters of respondents are 45 years or older (Table H-6), and were evenly divided among the age-groups of 45 to 54 (24%), 55 to 64 (25%), and 65 or older (25%). The Downstate group is significantly more likely than the Upstate group to be between 25 and 34 years of age (10% versus 5%).

Table H-6. Age of Appliance Rebate Program Area Respondent

Age of Respondent	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
18 to 24	1%	< 1%	2%
25 to 34	6%	5%*	10%
35 to 44	16%	16%	16%
45 to 54	24%	25%	23%
55 to 64	25%	26%	22%
65 or over	25%	25%	25%
Don't know/refused	3%	3%	2%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Table H-7 shows that the Downstate respondents have higher yearly incomes than Upstate respondents, with the Upstate group more likely to earn between $35,000 and $49,000 (16% versus 6%) and the Downstate group more likely to earn $100,000 or more (31% versus 18%).

Table H-7. Household Income of Appliance Rebate Program Area Respondents

Household Income	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Less than $15,000	2%	1%*	3%
$15,000 to $24,999	3%	3%	5%
$25,000 to $34,999	6%	7%	5%
$35,000 to $49,999	13%	16%*	6%
$50,000 to $74,999	15%	16%	13%
$75,000 to $99,999	13%	13%	13%
$100,000 or more	22%	18%*	31%
Don't know/refused	25%	26%	24%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Note: Totals may not equal 100% due to rounding.

Overall, the majority of respondents are women (64%). A larger majority of Upstate participants than Downstate participants are female (68% versus 57%; Table H-8).

Table H-8. Gender of Appliance Rebate Program Area Respondent

Gender	Overall	Upstate	Downstate
Sample size	*560*	*280*	*280*
Female	64%	68%*	57%
Male	36%	33%*	43%
Don't know/refused	< 1%	0%	< 1%

* Statistically different between Upstate and Downstate at the 90% confidence level.

Note: Totals may not equal 100% due to rounding.

H2. ENERGY CODE PROGRAM AREA

The Cadmus Team analyzed training participants demographically in relation to their energy code usage (CEOs versus industry professionals) and the types of buildings they work on. Table H-9 and Table H-10 show the distribution of CEOs and industry professionals for each wave. Local CEOs are responsible for code enforcement, while industry professionals are involved in complying with the code through their professions, such as architects, engineers, and builders.

Industry professionals outnumbered CEOs in the Wave 1 pre-training survey (78% to 22%). This value likely reflects the actual distribution of participants, since the pre-training survey was required for Wave 1 registration. The Wave 1 post-training survey responses had a substantially decreased proportion of industry professionals, while more than half of the respondents were CEOs, whose proportion increased. Just over half of the Wave 2 survey respondents were CEOs. Table 3-64 and Table 3-65 in the Training Participant Results portion of Section 3.2.3 Process Finding in the main report lists the distribution of professions among the respondents.

Table H-9. Code Enforcement and Industry Professional Survey Respondent Distribution for Wave 1, Energy Code Program Area

	Pre-Training		Post-Training	
Occupation	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
Code Enforcement	153	22%	97	47%
Industry Professionals	547	78%	111	53%
Total	**700**		**208**	

Table H-10. Code Enforcement and Industry Professional Survey Respondent Distribution for Wave 2, Energy Code Program Area

Occupation	**Frequency**	**Portion of Total**
Code Enforcement	188	57%
Industry Professionals	141	43%
Total	**329**	

Table H-11 and Table H-12 indicate the distribution of buildings (residential vs. commercial) that training participants work on. Most CEOs and industry professional survey respondents work on both residential and commercial buildings, although a substantial minority focuses only on residential projects. Respondents are least likely to focus solely on commercial projects.

Table H-11. Distribution of Building Types Worked on by Wave 1 Survey Respondents, Energy Code Program Area

	Pre-Training		Post-Training	
Building Type	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
Residential	119	18%	103	50%
Commercial	158	24%	15	7%
Both	381	58%	90	43%
Total	**658**		**208**	

Table H-12. Distribution of Building Types Worked on by Wave 2 Survey Respondents , Energy Code Program Area

	Code Enforcement		Industry Professionals	
Building Type	**Frequency**	**Portion of Total**	**Frequency**	**Portion of Total**
Residential	55	30%	57	40%
Commercial	22	12%	25	18%
Both	108	58%	59	42%
Total	**185**		**141**	

H3. ENERGY-EFFICIENCY PROGRAM AREA

The Energy-Efficiency Program Area attribution survey gathered information about characteristics of the respondents' organizations. As shown in Table H-13, education and healthcare were the most common principal activities of respondents' organizations, at 42% and 39%, respectively. The remainder of the organizations had a wide variety of purposes, usually involving serving the public (e.g., gym, court facilities, affordable housing).

Table H-13. Principal Activity of Organization Participating in Energy-Efficiency Program Area

Activity of Site Where Study was Conducted	
Sample size	*51*
Education	42% (21)
Healthcare	39% (20)
Public order and safety	5% (2)
Gym	5% (2)
Municipality and court facilities	3% (2)
Office	2% (1)
Warehouse and storage	1% (1)
Affordable housing	1% (1)
Parking garage	1% (1)

Note: Total may not equal 100% due to rounding.

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

One-half (50%) of the buildings where the energy-efficient measures were installed were built before 1960, while one-third (33%) were built between 1961 and 1980 (Table H-14). Only 17% of the buildings were built after 1980.

Table H-14. When Building was Built for Participants of Energy-Efficiency Program Area

Range	
Sample size	*51*
Before 1960	50% (26)
1961-1970	22% (11)
1971-1980	11% (6)
1981-1990	12% (5)
1991 or later	5% (3)

Note: Total may not equal 100% due to rounding.

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

The buildings in which the measures were installed vary widely in size, from less than 25,000 square feet (this building was actually less than 1,000 square feet) to more than 500,000 square feet (Table H-15). Three-quarters (87%) of the buildings were 100,000 square feet or larger.

Table H-15. Size of Building Receiving Energy-Efficiency Program Area Measures

Range	
Sample size	*51*
Less than 25,000 square feet	1% (1)
25,000-99,999	12% (5)
100,000-199,999	23% (13)
200,000-499,999	32% (16)
500,000 or more	32% (16)

Note: Total may not equal 100% due to rounding.

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

Most of the respondents (80%) reported having 250 or more employees in their facility, although a few had less than 10 full-time employees (Table H-16).

Table H-16. Number of Full-Time Equivalent Employees at Facility Receiving Energy-Efficiency Program Area Measures

Range	
Sample size	*51*
Fewer than 10	7% (3)
10-49	5% (3)
50-249	8% (5)
250 or more	80% (40)

Note: Total may not equal 100% due to rounding.

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

All 20 respondents representing education facilities reported having more than 250 students who attend the school, 19 of whom (95%) had more than 1,000 students (this is not shown in a table due to lack of variability in the responses).

Respondents who represent healthcare facilities reported the number of hospital beds in the facility. As shown in Table H-17, 20% of the healthcare facilities have fewer than 100 beds, another 35% have between 100 and 249 beds, and the remaining 45% have 250 beds or more. One healthcare facility did not respond to this question.

Table H-17. Number of Hospital Beds in Health Care Facility Receiving Energy-Efficiency Program Area Measures

Range	
Sample size	*19*
0-99	20% (3)
100-249	35% (8)
250 or more	45% (8)

Note: Base is respondents representing a healthcare facility.

Note: Total may not equal 100% due to rounding.

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

H4. RENEWABLE ENERGY PROGRAM AREA

PON 1613 Demographics, Renewable Energy Program Area

The buildings in which the renewable energy systems were installed varied widely in age. One-half were built before 1970, while 24% were built in 2001 or later (Table H-18).

Table H-18. When Building was Constructed, Renewable Energy Program Area

Year	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Before 1960	28%	33%	0%	33%
1961-1970	22%	29%	20%	17%
1971-1980	10%	8%	40%	0%
1981-1990	3%	8%	0%	0%
1991-2000	14%	8%	20%	17%
2001-2005	13%	4%	20%	17%
After 2005	11%	8%	0%	17%

Note: Total may not sum to 100% due to rounding.

The buildings ranged from between 1,000 and 4,999 square feet to over 500,000 square feet (Table H-19). The most common building size was between 25,000 and 49,999 square feet (23% of buildings).

Table H-19. Building Size, Renewable Energy Program Area

Square Feet	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
1,000-4,999	14%	17%	0%	17%
5,000-14,999	16%	13%	20%	17%
15,000-24,999	5%	4%	20%	0%
25,000-49,999	23%	13%	20%	33%
50,000-99,999	19%	13%	40%	17%
100,000-199,999	8%	21%	0%	0%
200,000-499,999	14%	17%	0%	17%
500,000 or more	2%	4%	0%	0%

Note: Total may not sum to 100% due to rounding.

The number of full-time employees at each facility ranged from fewer than five (17%) to 250 or more (14%), with the most frequently reported number of employees being between 20 and 49 (27%;Table H-20).

Table H-20. Number of Full-Time Equivalent Employees at Renewable Energy Program Area Facility

Range	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*35*	*24*	*5*	*6*
Fewer than 5	17%	17%	20%	17%
5-9	2%	4%	0%	0%
10-19	14%	8%	20%	17%
20-49	27%	13%	40%	33%
50-99	5%	13%	0%	0%
100-249	22%	29%	20%	17%
250 or more	14%	17%	0%	17%

Note: Total may not sum to 100% due to rounding.

Respondents representing education facilities reported the number of students who attended the school (Table H-21). Two-thirds of these respondents reported having 1,000 or more students, whereas the remaining one-third reported having between 100 and 999 students.

Table H-21. Education Facilities: Number of Students, Renewable Energy Program Area

Range	Overall	Solar PV, Upstate	Solar PV, Downstate	Non-Solar PV
Sample size	*18*	*15*	*1*	*2*
Fewer than 100	0%	0%	0%	0%
100-249	18%	0%	0%	50%
250-499	4%	7%	0%	0%
500-749	8%	0%	100%	0%
750-999	4%	7%	0%	0%
1,000 or more	66%	87%	0%	50%

Note: Total may not sum to 100% due to rounding.

PON 1686 Commercial End-User Demographics, Renewable Energy Program Area

The survey collected demographic information on respondents, which is presented separately for commercial and residential respondents below.

The smallest commercial building was between 25,000 and 49,999 square-feet, and the largest was between 200,000 and 499,999 square-feet. The third building was between 50,000 and 99,999 square-feet (Table H-22).

Table H-22. Commercial Building Size, Renewable Energy Program Area

Square Feet	Commercial
Sample size	*3*
Less than 1,000	0%
1,000-4,999	0%
5,000-14,999	0%
15,000-24,999	0%
25,000-49,999	33%
50,000-99,999	33%
100,000-199,999	0%
200,000-499,999	33%
500,000 or more	0%
Don’t know/refused	0%

Note: Total may not sum to 100% due to rounding.

Two of the commercial buildings were built before 1960. The third was built between 1991 and 2000 (Table H-23).

Table H-23. When Commercial Building was Constructed, Renewable Energy Program Area

Year	Commercial
Sample size	*3*
Before 1960	66%
1961-1970	0%
1971-1980	0%
1981-1990	0%
1991-2000	33%
2001-2005	0%
After 2005	0%
Don't know/refused	0%

Note: Total may not sum to 100% due to rounding.

Two of the commercial buildings had between 20 and 49 full-time employees, and the third had between 100 and 249 (Table H-24).

Table H-24. Number of Full-Time Equivalent Employees at Commercial Facility, Renewable Energy Program Area

Range	Commercial
Sample size	*3*
Fewer than 5	0%
5-9	0%
10-19	0%
20-49	66%
50-99	0%
100-249	33%
250 or more	0%
Don't know/refused	0%

Note: Total may not sum to 100% due to rounding.

PON 1686 Residential End-User Demographics, Renewable Energy Program Area

For residential respondents, homes ranged in size from less than 1,500 square-feet to over 5,000 square-feet. The majority of homes (56%) fell in the range of 2,500 to 4,999 square-feet (Table H-25).

Table H-25. Size of Residential Home, Renewable Energy Program Area

Square Feet	Residential
Sample size	*28*
Less than 1,500	7%
1,500-1,999	18%
2,000-2,499	7%
2,500-2,999	21%
3,000-3,999	21%
4,000-4,999	14%
5,000 or more	4%
Don't know/refused	7%

Note: Total may not sum to 100% due to rounding.

The number of people living in residential respondents' homes ranged from one to six, with a mean household size of 2.61. The most common number of home occupants was two (57%;Table H-26).

Table H-26. Number of People Living in Home, Renewable Energy Program Area

Number of Residents	Residential
Sample size	*28*
Mean (number of household members)	2.61
1	11%
2	57%
3	11%
4	11%
5	7%
6	4%
7 or more	0%
Don't know/refused	0%

Note: Total may not sum to 100% due to rounding.

Overall, the residential respondents were well-educated, with 43% having earned a graduate degree and 82% having earned a college degree or higher (Table H-27).

Table H-27. Highest Level of Education Completed for Residential Respondents of Renewable Energy Program Area

Education Level	Residential
Sample size	*28*
High school graduate	7%
Some college	7%
College graduate	32%
Some graduate school	7%
Graduate degree	43%
Don't know/refused	4%

Fifty percent of residential respondents were between the ages of 55 and 64. There was also a substantial proportion of the sample over the age of 65 (21%; Table H-28).

Table H-28. Age of Residential Renewable Energy Program Area Respondent

Age Range	Residential
Sample size	*28*
25-34	4%
35-44	7%
45-54	18%
55-64	50%
65 or over	21%
Don't know/refused	0%

In addition, 39% of residential respondents reporting having a household income over $150,000. Another one-third of residential respondents (32%) reported household incomes between $75,000 and $149,999 (Table H-29).

Table H-29. Household Income of Renewable Energy Program Area Respondent

Range	Residential
Sample size	*28*
Less than $50,000	4%
$50,000-$74,999	7%
$75,000-$99,999	18%
$100,000-$149,999	14%
$150,000 or more	39%
Don't know/refused	18%

Most residential respondents were male (82%;Table H-30).

Table H-30. Gender of Renewable Energy Program Area Respondent

Sources	Residential
Sample size	*28*
Female	18%
Male	82%

H5. TRANSPORTATION PROGRAM AREA

This section outlines the demographics of the organizations that implemented projects through the Clean Fleet Program and were evaluated as part of the Transportation Program Area. Table H-31and Table H-32 summarize demographic details.

Table H-31. Types of Organizations That Implemented Projects Through the Clean Fleet Program, Transportation Program Area

Type of Organization	Number of Projects
State Government Entity	1
Municipal Corporation	1
County	1
City	2

Table H-32. Types of Projects Implemented Through The Clean Fleet Program, Transportation Program Area

Organization	Type of Projects Implemented
State Government Entity	Compressed Natural Gas Fueling Station
County	Two Anti-Idling Measures (Heaters That Pre-Warm Truck Engines, and Automatic Vehicle Locators)
Municipal Corporation	Electric Vehicle Charging Station
City (2 projects)	Replacing 22 Conventionally-Powered Vehicles with Hybrid or Electric-Powered Vehicles

Project Related Details

- The state government entity represents nine component school districts that serve grades K-12. This project consists of installing a two-station compressed natural gas fueling station at the BOCES facility in Auburn, New York.
- The County has a population of almost one million people. The County Department of Public Works is responsible for planning, designing, constructing, maintaining, and repairing the physical facilities in the County, including its roads, bridges, buildings, and grounds. The Division of Fleet Services currently owns and maintains over 900 vehicles. This project consists of installing two anti-idling measures; 53 fuel-operated heaters that pre-warm truck engines and/or provide cab heat; and 48 automatic vehicle locators, which monitor location, speed, miles

traveled, idling time, unnecessary vehicle use, and emissions. Reduced idling results in reduced fuel usage.

- The Town is located on the North shore of Long Island, in Northwestern Suffolk County, New York. The Town is a municipal corporation whose governing body consists of five elected members, four town council members, and a supervisor. The Town has a population of slightly more than 200,000. This project consists of installing one electric vehicle (EV) charging station with plugs for five EVs at Level 2 charging at one of the two parking garages owned by the Town. The parking garage is the ideal location to demonstrate the practicality of EVs; commuters can drive their EVs to the train station, charge the car while they are at work, then drive home at the end of the day without consuming any petroleum.
- The City
    - The City's vehicle fleet delivers essential municipal services to eight million residents and over seven million daily visitors. The City has long been at the forefront of advancing clean vehicle technologies. One of the projects entails replacing two conventional school buses with two hybrid electric buses; replacing 12 diesel-powered paving screeds with 12 electric screeds; and replacing a conventional sanitation truck with a hybrid electric sanitation truck.
    - The other City project entails replacing five conventional street sweepers with five hybrid electric street sweepers, and replacing two conventional rack trucks with two hybrid electric rack trucks.
- These two projects will reduce fuel use and diesel emissions within three City agencies: the Department of Transportation, the Department of Sanitation, and the Department of Correction.

H6. ENERGY CONSERVATION STUDIES PROGRAM AREA

The primary principal activity of the 38 organizations surveyed was education. Educational institutions accounted for 65% of the sample of respondents (Table H-33).[1] The second most represented types of organizations were governmental entities and healthcare organizations.

Table H-33. Principal Activity of Organization, ESC Program Area

Activity of Site for Which Study Was Conducted	Overall
Sample size	*38*
Education	65% (21)
Government	14% (4)
Healthcare	14% (10)
Religious worship	7% (2)
Office	1% (1)

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

[1] Results weighted unless otherwise noted.

The number of employees at each organization participating in the Program Area was typically greater than 250 (41%). Only 6% of respondents employ fewer than five people (**Error! Reference source not found.**Table H-34).

Table H-34. Number of Employees at Organization, ESC Program Area

Range	Overall
Sample size	*38*
Fewer than 5	6% (1)
5-9	1% (1)
10-19	7% (2)
20-49	12% (2)
50-99	6% (1)
100-249	26% (6)
250 or more	41% (25)

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

Table H-35 shows that 53% of Program Area participants have between two and five locations in their organization. Sixteen percent of participants have a single location in their organization.

Table H-35. Number of Locations or Establishments in Organization, ESC Program Area

Number/Range	Overall
Sample size	*38*
1	16% (7)
2-5	53% (12)
6-10	20% (5)
11-20	1% (1)
More than 20	9% (13)

Note: The percentages before the parentheses reflect weighted data, while the numbers inside the parentheses reflect unweighted frequencies.

Appendix I:

RENEWABLE AND ENERGY-EFFICIENCY PROJECT-LEVEL SAVINGS SUMMARIES

- Renewable Energy Program Area Project-Level Savings Summaries
- Energy-Efficiency Program Area Project-Level Savings Summaries

Table I-1. RFP 1613 – Renewable Energy Program Area Project-Level Savings Summary

Proposal Number	Claimed Electrical Generation (kWh)	Claimed Fuel Savings (MMBTU)	Evaluated Electrical Generation (kWh)	Evaluated Fuel Savings (MMBTU)	Realization Rate
1026	25,990	-	30,148.40	-	1.16
1037	62,769	-	69,045.90	-	1.10
1049	60,700	-	66,770.00	-	1.10
1154	36,719	-	25,703.30	-	0.70
1164	34,782	-	40,347.12	-	1.16
1187	60,053	-	69,661.48	-	1.16
1212	65,149	-	75,572.84	-	1.16
1214	57,222	-	66,377.52	-	1.16
1243	-	260	-	182	0.70
1253	48,744	-	56,543.04	-	1.16
1269	13,469	-	15,624.04	-	1.16
1280	62,928	-	69,220.80	-	1.10
1306	43,960	-	50,993.60	-	1.16
1307	11,514	-	13,356.24	-	1.16
1309	36,719	-	42,594.04	-	1.16
1333	57,523	-	63,275.30	-	1.10
1343	43,738	-	50,298.70	-	1.15
1345	80,212	-	93,045.92	-	1.16
1347	58,218	-	67,532.88	-	1.16
1354	-	2,411	-	1,832	0.76
1355	-	6,156	-	4,679	0.76
1371	28,117	-	32,615.72	-	1.16
1389	67,517	-	78,319.72	-	1.16
2035	72,769	-	80,045.90	-	1.10
2040	15,289	-	16,817.90	-	1.10
2041	63,660	-	70,026.00	-	1.10
2048	50,794	-	55,873.40	-	1.10
2049	46,247	-	53,646.52	-	1.16
2052	-2084.00	874	(2,000.64)	839	0.96
2056	52,966	-	61,440.56	-	1.16
2059	50,716	-	55,787.60	-	1.10
2061	55,791	-	61,370.10	-	1.10
2061	8,800	-	9,768.00	-	1.11
2062	79,440	-	87,384.00	-	1.10
2065	68,519	-	75,370.90	-	1.10
2071	23,390	-	25,729.00	-	1.10
2087	54,231	-	62,907.96	-	1.16
2095	56,588	-	65,642.08	-	1.16
2101	-	7,277	-	5,531	0.76
2107	58,216	-	64,037.60	-	1.10
2109	30,260	-	35,101.60	-	1.16
2111	26,408	-	30,633.28	-	1.16
2121	61,851	-	71,747.16	-	1.16
2123	61,482	-	71,319.12	-	1.16

Proposal Number	Claimed Electrical Generation (kWh)	Claimed Fuel Savings (MMBTU)	Evaluated Electrical Generation (kWh)	Evaluated Fuel Savings (MMBTU)	Realization Rate
2130	51,281	-	59,485.96	-	1.16
2131	56,261	-	65,262.76	-	1.16
2135	30,678	-	35,586.48	-	1.16
2140	41,891	-	48,593.56	-	1.16
2155	27,700	-	32,132.00	-	1.16
2180	54,856	-	63,632.96	-	1.16
2181	54,856	-	63,632.96	-	1.16
2185	50,701	-	58,813.16	-	1.16
2187	44,423	-	51,530.68	-	1.16
2191	-	661	-	463	0.70
2198	117,008	87	81,905.60	61	0.70
2238	58,765	-	68,167.40	-	1.16
2252	55,488	-	64,366.08	-	1.16
2255	53,976	-	62,612.16	-	1.16
2256	53,976	-	62,612.16	-	1.16
2259	56,892	-	65,994.72	-	1.16
2260	-	150	-	144	0.96
2260	4967	-	5,761.72	-	1.16
2269	32,755	-	37,995.80	-	1.16
2275	53,648	-	62,231.68	-	1.16
2277	55,271	-	64,114.36	-	1.16
2280	56,445	-	65,476.20	-	1.16
2281	34,909	-	40,494.44	-	1.16
2287	53,770	-	62,373.20	-	1.16
2289	61,975	-	68,172.50	-	1.10
2290	47,359	-	54,935.99	-	1.16
2292	44,309	-	51,398.44	-	1.16
2293	60,784	-	70,509.44	-	1.16
2301	31,224	-	36,219.84	-	1.16
3011	-	323	-	226	0.70
3041	25,904	-	28,494.40	-	1.10
3153	55,625	-	64,525.00	-	1.16
3156	35,474	-	25,541.28	-	0.72

Total savings may vary slightly due to rounding

Table I-2. PON 1686 – Renewables Project Level Savings Summary

Agreement Number	Claimed Electricity Generation (kWh)	Claimed Fuel Savings (MBTU)	Evaluated Electricity Generation (kWh)	Evaluated Fuel Savings (MBTU)	Realization Rate
17941	-	-	-	-	1.13
17942-2	8,949	-	10,112	-	1.13
17942-3	56,036	-	63,321	-	1.13
17942-4	4,354	-	4,920	-	1.13
17942-5	7,454	-	8,423	-	1.13
17942-6	8,932	-	10,093	-	1.13
17942-7	8,844	-	9,994	-	1.13
17942-8	3,246	-	3,668	-	1.13
17942-9	8,370	-	9,458	-	1.13
17942-10	4,735	-	5,351	-	1.13
17942-12	3,517	-	3,974	-	1.13
17942-13	16,892	-	19,088	-	1.13
17942-14	11,752	-	13,280	-	1.13
17942-16	3,395	-	3,836	-	1.13
17942-17	3,697	-	4,178	-	1.13
17942-18	37,380	-	42,239	-	1.13
17942-19	3,271	-	3,696	-	1.13
17942-20	2,718	-	3,071	-	1.13
17942-21	13,883	-	15,688	-	1.13
17942-23	5,531	-	6,250	-	1.13
17942-24	4,955	-	5,599	-	1.13
17942-25	4,922	-	5,562	-	1.13
17942-26	12,740	-	14,396	-	1.13
17942-27	12,546	-	14,177	-	1.13
17942-28	18,084	-	20,435	-	1.13
17942-30	5,579	-	6,304	-	1.13
17942-31	7,498	-	8,473	-	1.13
17942-32	11,378	-	12,857	-	1.13
17942-33	5,174	-	5,847	-	1.13
17942-34	10,375	-	11,724	-	1.13
17942-35	31,078	-	35,118	-	1.13
17942-36	9,163	-	10,354	-	1.13
17942-37	9,877	-	11,161	-	1.13
17942-38	12,231	-	13,821	-	1.13
17942-39	5,534	-	6,253	-	1.13
17942-40	5,719	-	6,462	-	1.13

Agreement Number	Claimed Electricity Generation (kWh)	Claimed Fuel Savings (MBTU)	Evaluated Electricity Generation (kWh)	Evaluated Fuel Savings (MBTU)	Realization Rate
17942-41	9,087	-	10,268	-	1.13
17944	14,029	-	15,853	-	1.13
17944	7,384	-	8,344	-	1.13
17944	6,720	-	7,594	-	1.13
17944	8,418	-	9,512	-	1.13
17944	11,526	-	13,024	-	1.13
17944	9,095	-	10,277	-	1.13
17944	6,720	-	7,594	-	1.13
17944	9,548	-	10,789	-	1.13
17944	10,023	-	11,326	-	1.13
17944	10,023	-	11,326	-	1.13
17944	13,061	-	14,759	-	1.13
17944	11,340	-	12,814	-	1.13
17944	14,983	-	16,931	-	1.13
17944	19,600	-	22,148	-	1.13
17944	28,000	-	31,640	-	1.13
17944	27,982	-	31,620	-	1.13
17944	15,250	-	17,233	-	1.13
17944	13,290	-	15,018	-	1.13
17944	13,190	-	14,905	-	1.13
17944	11,351	-	12,827	-	1.13
17944	2,529	-	2,858	-	1.13
17944	11,880	-	13,424	-	1.13
17944	11,780	-	13,311	-	1.13
17944	22,000	-	24,860	-	1.13
17944	6,324	-	7,146	-	1.13
17944	4,300	-	4,859	-	1.13
17944	-	-	0	-	1.13
17944	11,501	-	12,996	-	1.13
17944	17,187	-	19,421	-	1.13
17945	58,990	-	66,659	-	1.13
17945	182,803	-	206,567	-	1.13
17945	85,771	-	96,921	-	1.13
17945	143,027	-	161,621	-	1.13
17945	35,660	-	40,296	-	1.13
17945	51,803	-	58,537	-	1.13

Agreement Number	Claimed Electricity Generation (kWh)	Claimed Fuel Savings (MBTU)	Evaluated Electricity Generation (kWh)	Evaluated Fuel Savings (MBTU)	Realization Rate
17945	284,182	-	321,126	-	1.13
17945	392,995	-	444,084	-	1.13
17946	10,505	-	11,871	-	1.13
17946	7,023	-	7,936	-	1.13
17946	5,333	-	6,026	-	1.13
17946	5,947	-	6,720	-	1.13
17946	9,267	-	10,472	-	1.13
17946	3,895	-	4,401	-	1.13
17946	4,291	-	4,849	-	1.13
17946	5,271	-	5,956	-	1.13
17946	5,027	-	5,681	-	1.13
17946	9,942	-	11,234	-	1.13
17946	4,306	-	4,866	-	1.13
17946	5,871	-	6,634	-	1.13
17946	5,033	-	5,687	-	1.13
17946	5,495	-	6,209	-	1.13
17946	3,145	-	3,554	-	1.13
17946	13,989	-	15,808	-	1.13
17946	2,923	-	3,303	-	1.13
17946	6,714	-	7,587	-	1.13
17946	4,277	-	4,833	-	1.13
17946	13,134	-	14,841	-	1.13
17946	12,034	-	13,598	-	1.13
17946	7,860	-	8,882	-	1.13
17946	8,269	-	9,344	-	1.13
17946	6,782	-	7,664	-	1.13
17946	8,605	-	9,724	-	1.13
17946	7,141	-	8,069	-	1.13
17946	9,736	-	11,002	-	1.13
17946	5,351	-	6,047	-	1.13
17946	8,462	-	9,562	-	1.13
17946	5,282	-	5,969	-	1.13
17946	2,395	-	2,706	-	1.13
17946	3,298	-	3,727	-	1.13
17946	5,697	-	6,438	-	1.13
17946	4,256	-	4,809	-	1.13

Agreement Number	Claimed Electricity Generation (kWh)	Claimed Fuel Savings (MBTU)	Evaluated Electricity Generation (kWh)	Evaluated Fuel Savings (MBTU)	Realization Rate
17946	10,393	-	11,744	-	1.13
17946	8,300	-	9,379	-	1.13
17946	10,079	-	11,389	-	1.13
17946	7,216	-	8,154	-	1.13
17946	5,317	-	6,008	-	1.13
17946	6,694	-	7,564	-	1.13
17946	2,138	-	2,416	-	1.13
17946	4,094	-	4,626	-	1.13
17946	9,227	-	10,427	-	1.13
17946	4,874	-	5,508	-	1.13
17946	6,731	-	7,606	-	1.13
17946	6,182	-	6,986	-	1.13
17946	5,223	-	5,902	-	1.13
17946	4,934	-	5,575	-	1.13
17946	5,347	-	6,042	-	1.13
17946	4,100	-	4,633	-	1.13
17946	7,914	-	8,943	-	1.13
17946	4,968	-	5,614	-	1.13
17946	3,036	-	3,431	-	1.13
17946	19,178	-	21,671	-	1.13
17946	4,875	-	5,509	-	1.13
17946	5,439	-	6,146	-	1.13
17946	4,808	-	5,433	-	1.13
17946	2,970	-	3,356	-	1.13
17946	8,832	-	9,980	-	1.13
17946	6,538	-	7,388	-	1.13
17946	6,887	-	7,782	-	1.13
17946	8,307	-	9,387	-	1.13
17946	7,196	-	8,131	-	1.13
17946	4,418	-	4,992	-	1.13
17946	10,626	-	12,007	-	1.13
17946	4,810	-	5,435	-	1.13
17946	9,706	-	10,968	-	1.13
17946	3,676	-	4,154	-	1.13
17946	8,756	-	9,894	-	1.13
17946	16,451	-	18,590	-	1.13

Agreement Number	Claimed Electricity Generation (kWh)	Claimed Fuel Savings (MBTU)	Evaluated Electricity Generation (kWh)	Evaluated Fuel Savings (MBTU)	Realization Rate
17946	6,425	-	7,260	-	1.13
17946	5,369	-	6,067	-	1.13
17946	9,016	-	10,188	-	1.13
17946	10,945	-	12,368	-	1.13
17946	6,487	-	7,330	-	1.13
17946	7,042	-	7,957	-	1.13
17946	6,827	-	7,715	-	1.13
17946	7,540	-	8,520	-	1.13
17946	30,650	-	34,635	-	1.13
17946	11,458	-	12,948	-	1.13
17946	4,028	-	4,552	-	1.13
17946	4,634	-	5,236	-	1.13
17946	9,393	-	10,614	-	1.13
17946	15,756	-	17,804	-	1.13
17946	5,933	-	6,704	-	1.13
17946	3,736	-	4,222	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	13,992	-	15,811	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	19,810	-	22,385	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	6,770	-	7,650	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13

Agreement Number	Claimed Electricity Generation (kWh)	Claimed Fuel Savings (MBTU)	Evaluated Electricity Generation (kWh)	Evaluated Fuel Savings (MBTU)	Realization Rate
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	-	-	-	-	1.13
17946	16,451	-	18,590	-	1.13
17947	696,813	-	787,399	-	1.13
17947	291,415	-	329,299	-	1.13

Table I-3. RFP 1613 – Energy-Efficiency Program Area Project-Level Savings Summary

Project	Total Claimed Energy Savings (MMBtu)	Total Evaluated Gross Energy Savings (MMBtu)	Realization Rate
1	4,940	5,286	107%
2	4,169	4,461	107%
3	574	536	93%
4	465	345	74%
5	12	16	139%
6	9,597	12,670	132%
7	109	96	88%
8	6,231	10,506	169%
9	13,361	517	4%
10	2,871	466	16%
11	15	17	114%
12	380	361	95%
13	156	261	167%
14	2,047	1,924	94%
15	12,013	28,884	240%
16	7,420	7,418	100%
17	1,279	1,351	106%
18	748	415	55%
19	4,657	4,735	102%
20	386	363	94%
21	2,361	4,418	187%
22	2,052	2,595	126%
23	1,107	1,097	99%
24	2,317	2,178	94%
25	8,310	9,369	113%
26	1,236	1,165	94%
27	5,606	4,808	86%
28	4,245	3,990	94%
29	1,012	949	94%
30	9,924	5,408	54%
31	1,326	1,282	97%
32	3,532	1,506	43%
33	2,052	1,429	70%
34	316	179	57%
35	29,036	29,036	100%

Project	Total Claimed Energy Savings (MMBtu)	Total Evaluated Gross Energy Savings (MMBtu)	Realization Rate
36	5,885	6,272	107%
37	8,466	8,628	102%
38	6,929	5,053	73%
39	5,875	6,031	103%
40	29,563	29,310	99%
41	943	933	99%
42	9,091	8,769	96%
43	42,410	41,943	99%
44	13,800	9,375	68%
45	1,229	1,155	94%
46	118	115	98%
47	761	801	105%
48	1,593	1,568	98%
49	9,085	9,468	104%
50	1,650	1,766	107%
51	25	25	100%
52	1,675	1,364	81%
53	3,175	3,221	101%
54	2,193	1,092	50%
55	891	751	84%
56	91	86	94%
57	786	708	90%
58	904	954	106%
59	825	775	94%
60	1,344	1,919	143%
61	3,857	3,882	101%
62	506	476	94%
63	1,113	2,203	198%
64	1,050	15,312	1458%
65	3,964	4,241	107%
66	2,585	2,835	110%
67	2,120	2,759	130%
68	5,188	6,760	130%
69	2,941	3,147	107%
70	81	43	53%
71	21,245	32,318	152%

Project	Total Claimed Energy Savings (MMBtu)	Total Evaluated Gross Energy Savings (MMBtu)	Realization Rate
72	770	770	100%
73	147	149	102%
74	184	201	110%
75	3,755	4,018	107%
76	1,670	2,210	132%
77	1,454	1,366	94%
78	453	1,385	306%
79	300	264	88%
80	618	581	94%
81	1,407	1,305	93%
82	29	25	85%
83	1,060	1,399	132%
84	625	600	96%
85	1,209	1,469	122%
86	1,960	1,843	94%
87	4,337	4,145	96%
88	1,043	980	94%
89	39,863	42,653	107%
90	10,530	10,432	99%
91	12,522	9,392	75%
92	1,458	14,575	1000%
93	625	674	108%
94	100	100	100%
95	1,238	1,164	94%
96	74	79	107%
97	7,982	7,973	100%
98	138	129	94%
99	257	175	68%
100	12,499	3,280	26%
101	20,607	-	0%
102	12,225	10,672	87%
103	275	366	133%
104	142	39	27%
105	187	176	94%
106	53	54	101%
107	4,742	5,074	107%

Project	Total Claimed Energy Savings (MMBtu)	Total Evaluated Gross Energy Savings (MMBtu)	Realization Rate
108	7,915	7,440	94%
109	4,381	4,118	94%
110	147	193	131%
111	149	206	138%
112	965	881	91%
113	543	578	107%
114	122	126	103%
115	225	212	94%
116	19,448	17,318	89%
117	3,143	10,815	344%
118	7,551	7,353	97%
119	9,057	8,439	93%
Total*	**539,998**	**553,494**	**102%**

*Totals rounded