

# NYSERDA's Heat Recovery Program

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<https://www.nyserda.ny.gov/All-Programs/Heat-Recovery-Program/Heat-Recovery-Project-Development>



**NYSERDA**

## Heat recovery turns a problem into an opportunity.

Buildings waste heat through a variety of processes including ventilation, cooling and wastewater removal.

Recovering wasted heat and recycling it directly at point of use or storing it for later represents a promising approach to existing building decarbonization.



Cooling produces heat



Heat is lost through ventilation...



...or goes down the drain

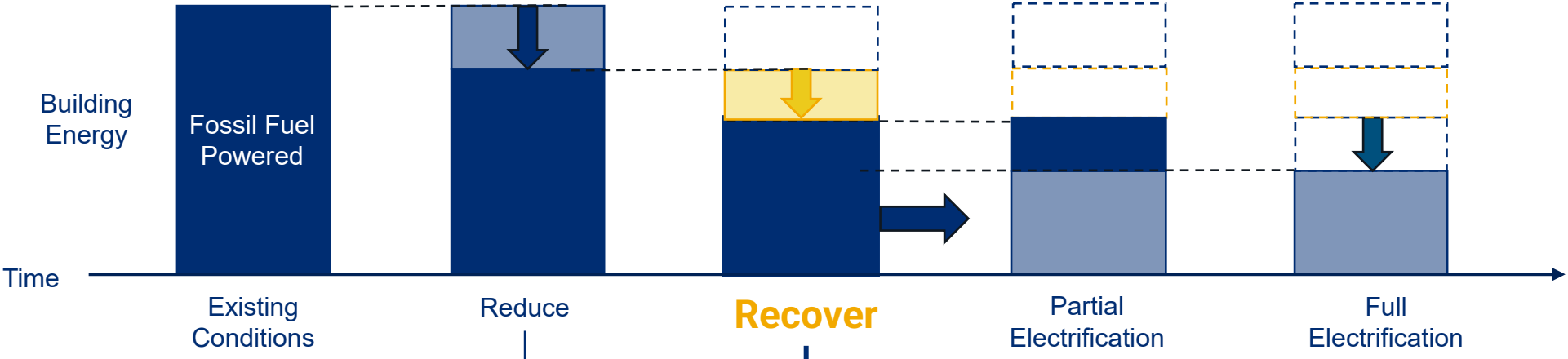


Internal processes also produce heat



Heat can be stored

# Heat recovery is an essential step in phased decarbonization



**Reduce Energy Load and Reconfigure**

- Building Envelope Improvements
- Control Optimization
- Ventilation Improvements
- Dedicated Outside Air System
- Hydronic Distribution
- Lower Heating Supply Temp.
- Terminal Units Replacement

**Recover Wasted Heat**

- Ventilation Heat Recovery
- Cooling Heat Recovery
- Wastewater Heat Recovery
- Thermal Storage

**Partial Electrification**

Replace fossil fuel inputs and prioritize the techno-economic portion of load

- Air Source Heat Pumps
- Water Source Heat Pumps
- Geothermal
- Thermal Layering

**Full Electrification**

In-time, replace or remove the remaining peak load equipment

- Heat Pumps
- Thermal Storage
- District Thermal Network
- Grid-interactivity

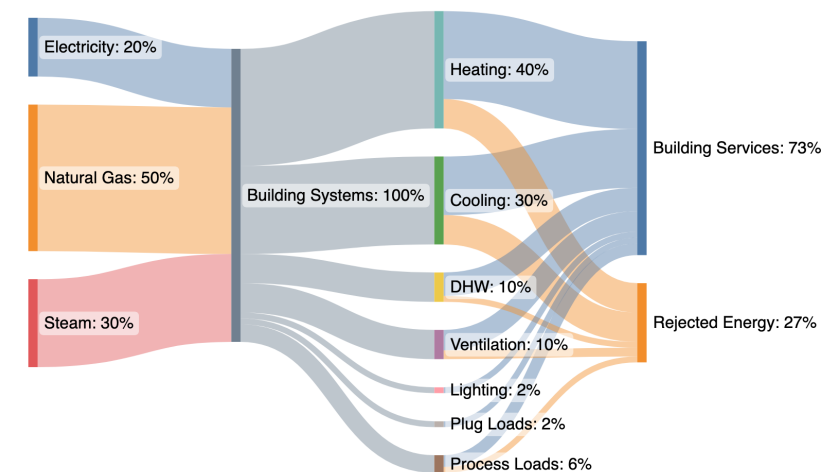
# The Heat Recovery Program (PON 5547) offers \$12M in funding across four categories:

Category Name	Funded Activities	Maximum NYSERDA Funding Per Award	Building Eligibility	Application
Category 1: Heat Recovery Opportunity Assessment	Document current operations and define heat recovery opportunity	\$40,000 (75% cost-share)	Existing building in NYS  All sectors, excluding new construction and single family	<a href="#">Apply</a> before November 17, 2025
Category 2: Heat Recovery Project Design	Develop schematic designs for viable heat recovery project	\$80,000 (75% cost-share)		
(NEW) Category 3: Heat Recovery Demonstration	Implement eligible heat recovery projects*	\$2,000,000		Round 1: <a href="#">Submit proposal</a> by November 7, 2024  Rounds 2,3 TBA for 2025
(NEW) Category 4: Manufacturer Growth Initiative	Business development for <a href="#">Manufacturers</a> qualified under <a href="#">RFQL 5217 - Heat Recovery Solutions</a>	\$100,000 (75% cost-share)	N/A	<a href="#">Apply to RFQL 5217</a> , then <a href="#">apply to Category 4</a> before November 17, 2025

# 1 Heat Recovery Opportunity Assessment

- Document current building infrastructure, quantify/diagram rejected heat from current operations, explore potential cost-effective measures to recover and reuse heat to reduce total consumption
  - Consider ventilation, cooling, process, wastewater, and thermal storage in assessment
  - Key outcome is actionable information providing justification for customers to move forward with design
- **75% cost share of assessment costs capped at \$40k**
  - Kickoff Meeting with NYSERDA
  - *Final Report:* Process, Findings, and Recommendations from Assessment including an Energy Flow Diagram

Sample Energy Flow Diagram



Made with SankeyMATIC

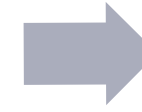
**Additional examples available  
[on the Program webpage](#)**

## 2 Heat Recovery Project Design

- Develop a technically and economically feasible project design to improve the heat recovery performance of an existing property
- Recovery from ventilation, cooling, process, and wastewater systems is eligible, and thermal storage when accompanying other eligible measures
- Examples of potential designs include:
  - Integrating Energy Recovery Ventilator (ERV) to existing or modified building ventilation systems
  - Heat recovery chiller extracting heat from the condenser water loop before it is rejected via cooling towers
  - Wastewater heat pump, recovering heat from wastewater at building scale before it exits to the municipality's sanitary sewer main
- **75% cost share of design costs capped at \$80k**
  - Design Charrette with NYSERDA
  - Schematic project designs, data collection form, and accompanying narrative
  - Final versions reflecting NYSERDA comments

# Process for Categories 1-2: Assessment and Design

## Category 1 Opportunity Assessment



## Category 2 Project Design

### Prepare

Applicant creates budget and scope of work using [templates](#)

### Apply

Upload completed budget and scope of work to [application](#)

### Approval – 2 weeks

Application approved, applicant receives PO

### Work ensues – ~24 weeks

Assessment in progress

### Assessment Complete

Decide to pursue design

### Prepare

Applicant creates budget and scope of work using [templates](#)

### Apply

Upload completed budget, scope of work and feasibility study to [application](#)

### Approval – 2 weeks

Application approved, applicant receives PO

### Work ensues – ~24 weeks

Design in progress

### Design Complete

Decide to implement; eligible projects submit to Category 3 Demonstration

## 3 Heat Recovery Demonstration

Competitive implementation funding for projects that can demonstrate replicable approaches to deploying heat recovery solutions in existing buildings

- Focused on 4 heat recovery solution types
- Up to \$2M per award
- Three rounds of awards
- Round 1 proposals due November 7, 2024, 3PM ET
- Projects that have received or plan to receive incentives from other programs in the Clean Energy Fund or utility administered incentives are **not eligible to receive funding for the same measures and activities within the Heat Recovery Program.**
- Construction must begin within 1 year of award, but not before award



# Eligible Heat Recovery Solutions for Category 3



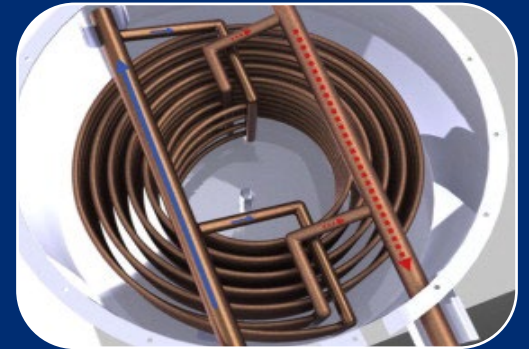
Data Center Heat Recovery



High Temperature Heat Pumps



Packaged Exhaust Heat Recovery



Thermal Storage

# Data Center Heat Recovery

A solution that recovers and reuses waste heat from data center operations, resulting in lower utility energy demands, such as using heat exchange systems or novel waste heat-to-power conversion methods.

- Target Participants: data centers, commercial buildings with computer rooms, tenant IT or server loads
- Example of potential data center heat recovery projects include:
  - Heat recovery chiller extracting heat from the condenser water loop before it is rejected via cooling towers

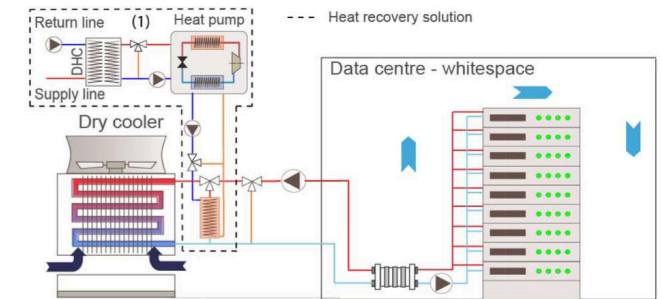
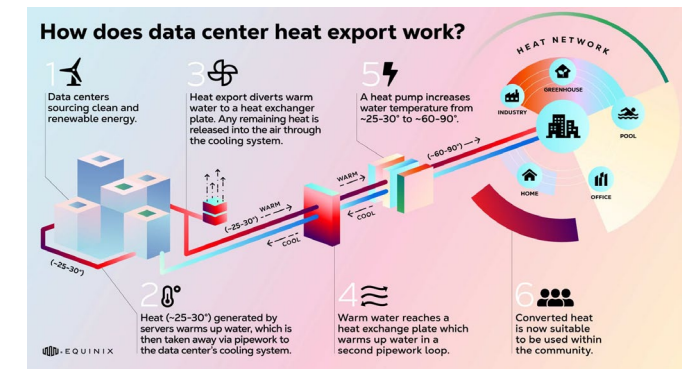


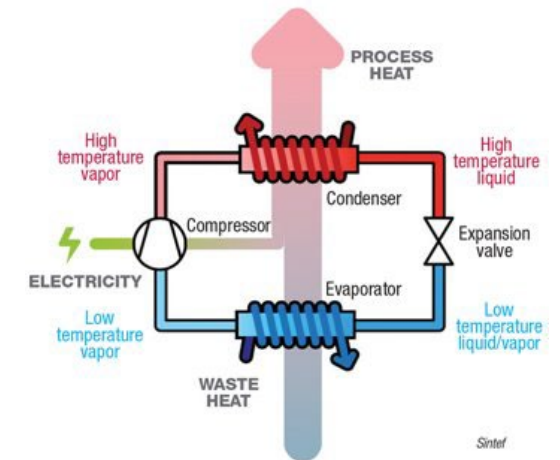
Figure 8: On chip cooling heat recovery solution representation



# High Temp Heat Pumps and Heat Recovery

A solution that leverages waste heat recovery with commercially available high-temperature heat pumps to meet process heating requirements of up to 150°C/302°F, which results in improved process energy efficiency. Open to projects targeting DHW or space heating loads replacing steam.

- Target Participants: Industrial & manufacturing, hospitals, commercial, multifamily
- Examples of potential High Temp Heat Pump projects include:
  - High temp water source heat pump for industrial process using waste heat
  - Replace steam boiler with high temp heat pump for steam perimeter heating



# Packaged Exhaust Heat Recovery

A high-efficacy packaged wastewater or ventilation heat recovery solution without the complexity and costs of onsite stick-built heat exchangers.

- Target Participants: multifamily (market-rate & affordable), commercial, institutional
- Examples of potential exhaust heat recovery projects include:
  - Integrating Energy Recovery Ventilator (ERV) to existing or modified building ventilation system
  - Wastewater heat pump, recovering heat from wastewater at building scale before it exits to the municipality's sanitary sewer main

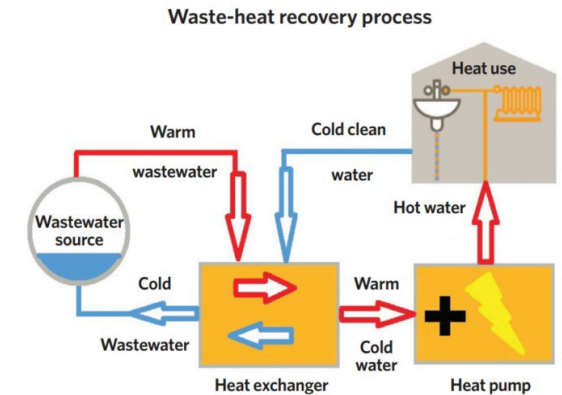
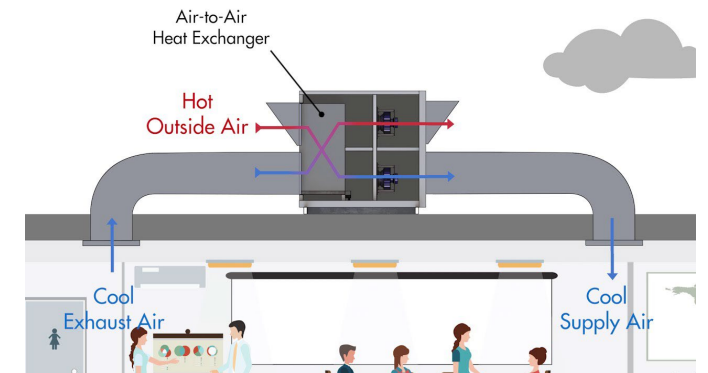


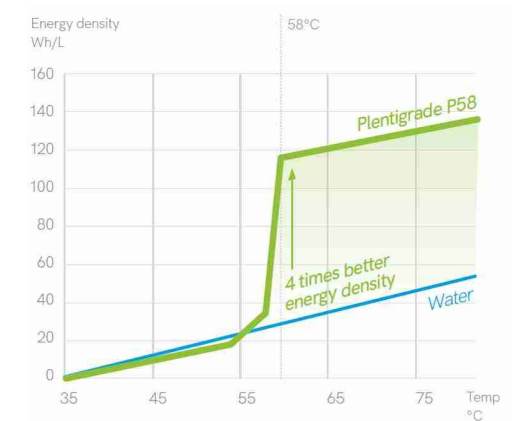
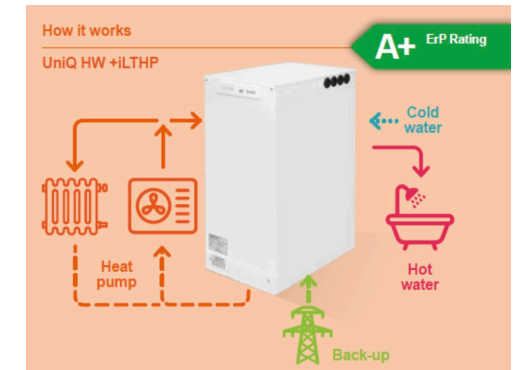
Figure 1: Wastewater heat-recovery process - adapted (13, 14)



# Thermal Storage and Heat Recovery

A solution that allows heat to be recovered at one point in time and used at another, helping to downsize heating and cooling load and provide grid services.

- Targeted solutions, such as PCM will provide a higher energy density than water and ice. Water and ice storage systems will be considered where the system is planned for small commercial buildings, hospitals, and industrial facilities or to lower overall energy costs for tenants in Affordable Multifamily Housing.
- Target Participants: Large buildings with space constraints (office, multifamily)
- Examples of potential thermal storage projects include:
  - Store waste heat from cooling load with PCM to produce domestic hot water
  - Store waste heat in a water tank to mitigate peak load



# Project Attributes for Category 3

## Impact

- The proposal demonstrates impact in the form of **energy savings, emissions reductions and reuse of waste heat**.
- The project team has the capacity and expertise needed to implement the proposal.
- The project design is well defined and comprehensive.

## Scalability

- The proposal demonstrates that the heat recovery solution has a strong potential for widespread adoption within the proposer's portfolio or by the broader market.

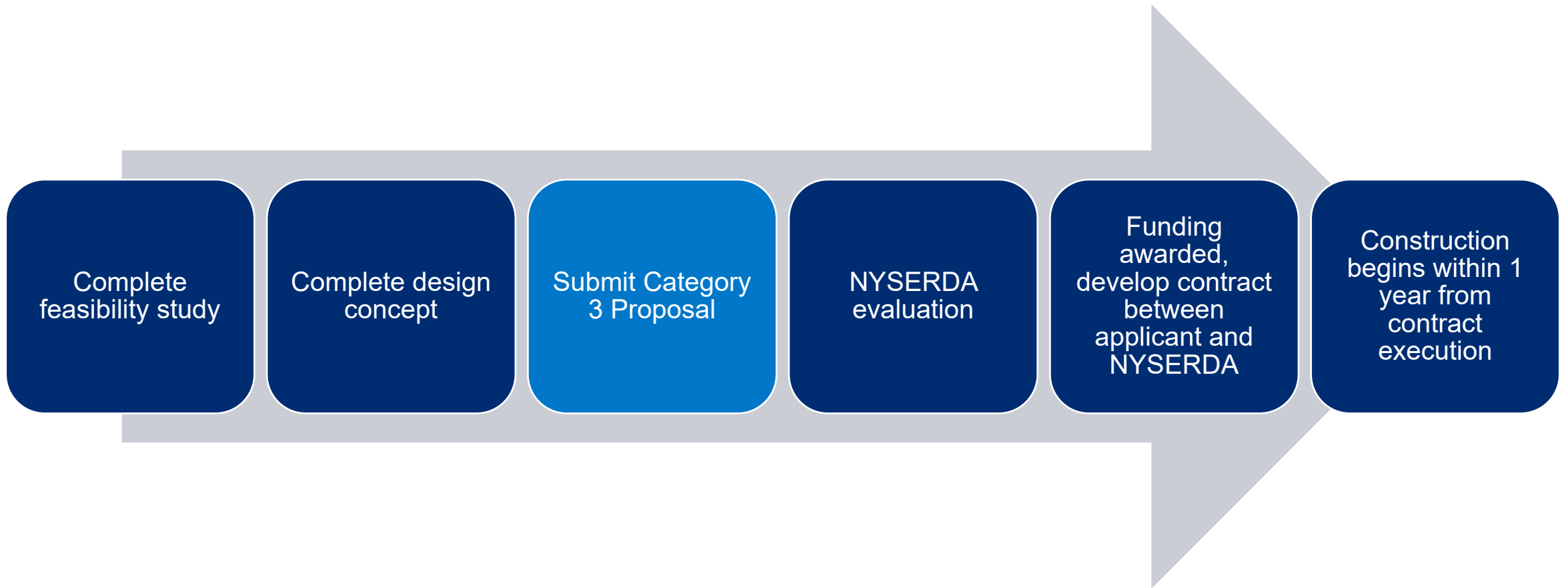
## Cost effectiveness

- The proposal examines the costs and benefits of the project in terms of total investment relative to the energy and carbon intensity improvements.
- The project team demonstrates commitment by providing private investment.

## Program Policy Factors

- Benefits of project funding to [disadvantaged communities as defined by the Climate Justice Working Group](#)

# Process for Category 3



# Eligibility for Category 3

## What projects are eligible?

- Must include 1 of the listed heat recovery solutions (data center, packaged exhaust heat recovery, high temp heat pump, thermal storage)
- Completed feasibility study (ex: Category 1 Heat Recovery Opportunity Assessment or FlexTech study)
- Completed Basis of Design (BOD) narrative, or one-line concept diagrams or schematic design drawings (ex: Category 2 Project Design deliverables)
- Must begin construction within 1 year of, and not before, the NYSERDA contract execution

## What buildings are eligible?

- An existing property of any size, located in NYS
- All sectors **except** single family buildings and new construction



# Eligibility for Category 3

## Who can apply?

- Project team must include an eligible consultant and a customer representing an eligible building
- Any party of the project team can apply
- Funding will be dispersed to the applicant

## What costs are eligible?

### Ineligible expenses:

- NYSERDA will not pay for efforts which have already been undertaken. The project team cannot claim as cost-share in their proposal any expenses that have already been incurred.

### Eligible expenses:

- The fees for both primary and subcontracted architects, consultants and engineers.
- Implementation expenses, including construction labor and material costs.

## Other funding conditions

- Projects that have received or plan to receive incentives from other programs in the [Clean Energy Fund](#) or utility administered incentives **are not eligible to receive funding for the same measures and activities within the Heat Recovery Program.**
- Selected proposals will work with the NYSERDA team to qualify their proposed solutions through RFQL 5217 - Heat Recovery Solutions

# Proposal Requirements for Category 3

## How to submit?

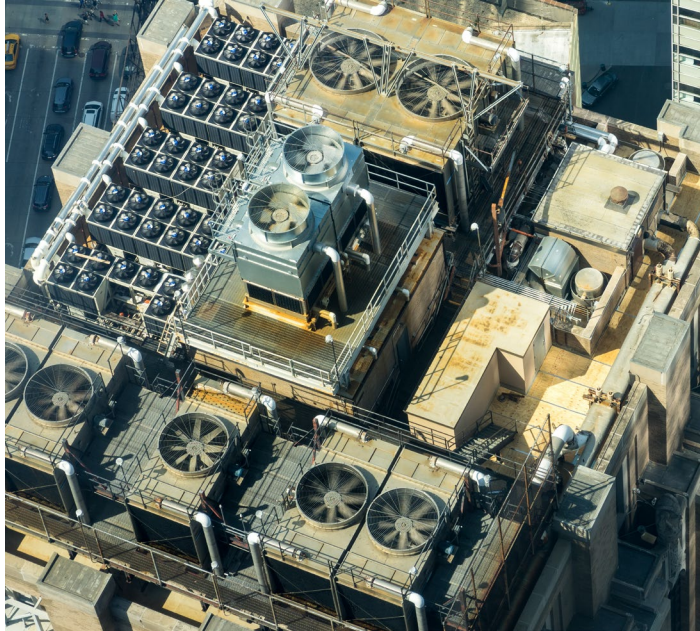
- Submit proposal via the “Apply Online” link on [Heat Recovery Project Development Program - Category 3 Demonstration](#)
- Round 1 proposals due November 7, 2024 by 3:00 PM ET.
- Two more rounds of awards will be announced for 2025

## What to submit?

- Proposal (use Category 3 Proposal Template, [Attachment C-1](#))
- Budget (use Budget, [Attachment B](#))
- Opportunity Assessment or equivalent study
- Basis of Design (BOD) narrative, or one-line concept diagrams or schematic design drawings

# Category 4: Manufacturer Growth Initiative

## [RFQL 5217 - Heat Recovery Solutions]



*The **NYSERDA Heat Recovery Solutions [HRS]** qualification recognizes technologies that enable buildings to decarbonize their operations and advances the adoption of heat recovery by New York State's real estate decision-makers and the architects, engineers, and retrofit construction communities.*

Through this technical vetting of solution providers and market acceptance of products, NYSERDA will promote qualified heat recovery solutions and their real-world efficacy:

- Help qualified Manufacturers access the NYS retrofit market [PON 5547]
- Participate in roundtable exchanges with key market stakeholders
- Support heat recovery knowledge & technology transfer
- **NEW -- Category 4:** direct funding for Manufacturer business development

## [Heat Recovery Solutions -- RFQL 5217](#)

[Read RFQL Documentation](#) | [Share with Manufacturers](#) | [Submit Online Application](#)



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# Category 4: Manufacturer Growth Initiative

[5 areas of focus | 75% of total cost | \$100K max contract]

## Market Research & Adaptation:

- Conducting thorough market research to understand the New York State market, consumer preferences, and competitive landscape.
- Establish local product installation, testing, maintenance, repair, and customer support resources.

## Regulatory Compliance:

- Ensuring products meet North American and New York State market's safety, quality, and environmental standards.

## Supply Chain & Logistics:

- Establishing reliable local supply chain networks to localize products for the United States and distribute them within New York State.
- Dealing with customs duties, tariffs, and import regulations. Securing warehousing and distribution facilities in New York State.

## Sales & Marketing:

- Establishing sales channels, partnerships, representatives, and distribution networks.

## Human Resources:

- Hiring local staff or relocating key trained personnel to manage New York operations.

# Category 4 -- Application Process

The ***Manufacturer Growth Initiative*** [[Category 4](#)], provides cost-share to Manufacturers qualified under **NYSERDA's RFQL 5217 - Heat Recovery Solutions** for business development services:

- Applications from qualified HRS Manufacturers will be accepted on a first come, first served basis
- Applicants must complete [2]: Budget Template [[Attachment B](#)], Scope of Work Template [[Attachment G](#)]
- Submit online application via SeamlessDocs [[PON 5547](#)], upload Budget & Scope of Work documents
- Reviewed by NYSERDA staff, contract developed based on scope & purchase order issued [\$100K max]
- Applications accepted until November 17, 2025, or until funds are fully committed [\$1.5M currently]
- Contact Alexander Jahn: [alexander.jahn@nyserda.ny.gov](mailto:alexander.jahn@nyserda.ny.gov)

# Visit the Heat Recovery Program website to apply

Let's work together to make heat recovery a common solution for building decarbonization in NYS. Reach out to [HeatRecovery@nyserda.ny.gov](mailto:HeatRecovery@nyserda.ny.gov)



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