



Technical Assistance Studies

Stephen Szczechura
Energy Efficiency Consultant
stephen.szczechura@eversource.com

Jeremy Blanchard CEM
Senior Project Manager
Jeremy.Blanchard@gdsassociates.com

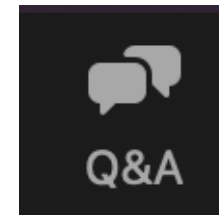
Powered by:





We look forward to hearing from you

Please put all your questions into the questions section with this icon.



Agenda

1

Strategic Partnerships

NHSaves values strategic partnership to drive energy efficiency projects

2

What?

Overview of TA Studies and how the energy efficiency program can support customers

3

Why?

Demonstrate benefit to customers and business partners

4

How?

Outline the TA study process, and some best practices



Benefits of Utility Strategic Partnerships

- Allows for a multifaceted approach in providing integrated solutions to C&I customers unique needs
- Utility companies' energy efficiency programs have a wealth of resources and expertise enabling your organization to develop more effective programs and strategies
- Provide access to incentives and funding opportunities to support your energy efficiency initiatives
- A strategic partnership can help organizations align their operations with long-term sustainability goals, contributing positively to corporate social responsibility (CSR) initiatives.



What are TA studies?

- Detailed comprehensive studies covering one or more beyond-lighting custom measures
- Co-funded by customer and the Utility's energy efficiency programs
- Requires detailed calculations and turnkey costs
- May include metering, data logging, trend data collection or other sources of data
- Baseline and proposed case validation
- Examples of measures

Improvements

Hot Water Boilers



Steam Boilers



Boiler Plant

Chiller Plant Improvements



Energy Management Systems

Misc Equipment
Radiant Panel Listing
Induction Unit Listing
VAV Listing
UH/CUH/EUH Listing
Exhaust Fans
KILN Systems
FUME Exhausts
Domestic Hot Water
Ductless Splits

Freezer Temp
7 °F

Energy Metering
Kitchen Gas Meter 14,501,600 CF
RTU's High Roof Gas Meter 10,919,150 CF
Boilers Gas Meter 6,314,270 CF
RTU's Lower Roof Gas Meter 6,199,840 CF
Water Heaters Gas Meter 205,736 CF
Main Electric Meter 9,688,244 kWh



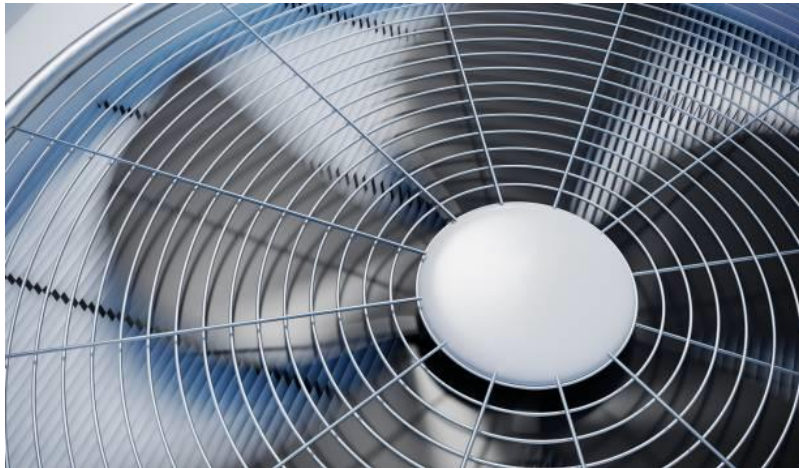
Outside Air Conditions
Temperature 41.1 °F
Humidity 40.2 %Rh
Enthalpy 12.2

Floor Plans
First Floor Overview
First Floor A
First Floor B
First Floor C
First Floor D
First Floor E
Second Floor Overview
Second Floor A
Second Floor B
Second Floor C
Second Floor D

Description	Suppl Temp	Return Temp	Status
Hot Water System 138 °F 134 ° Active			
Chilled Water System 65 °F 79 ° Inactive			
RTU-1 B Wing 123 - 133 70 °F 72 ° On			
RTU-2 B Wing 135 - 145 72 °F 72 ° On			
RTU-3 D Wing 149 - 157 69 °F 73 ° On			
RTU-4 D Wing 161 - 171 71 °F 72 ° On			
RTU-5 B Wing 120 - 122 70 °F 73 ° On			
RTU-6 D Wing 160 - 164 71 °F 69 ° On			
RTU-7 Band Room 69 °F 74 ° On			
RTU-8 Auditorium Stage 72 °F 68 ° On			
RTU-9 Auditorium 70 °F 67 ° On			
RTU-10 Cafeteria 71 °F 74 ° On			
RTU-11 Library 71 °F 70 ° On			
RTU-12 Admin 101 - 113 70 °F 72 ° On			
RTU-13 Weight Room 85 °F 72 ° On			
RTU-14 Gym Locker Rooms 69 °F 80 ° On			
RTU-15 Gymnasium 75 °F 74 ° On			
RTU-16 Gymnasium 75 °F 74 ° On			
RTU-17 Kitchen 78 °F 72 ° On			
RTU-18 Senior Annex 72 °F 68 ° On			

Heating, Ventilating, and Air Conditioning (HVAC)

Not including boilers, chillers, and EMS



Building Envelope



Chilled Water, Hot Water, and Steam Distribution Systems



Electric Motors and Drives



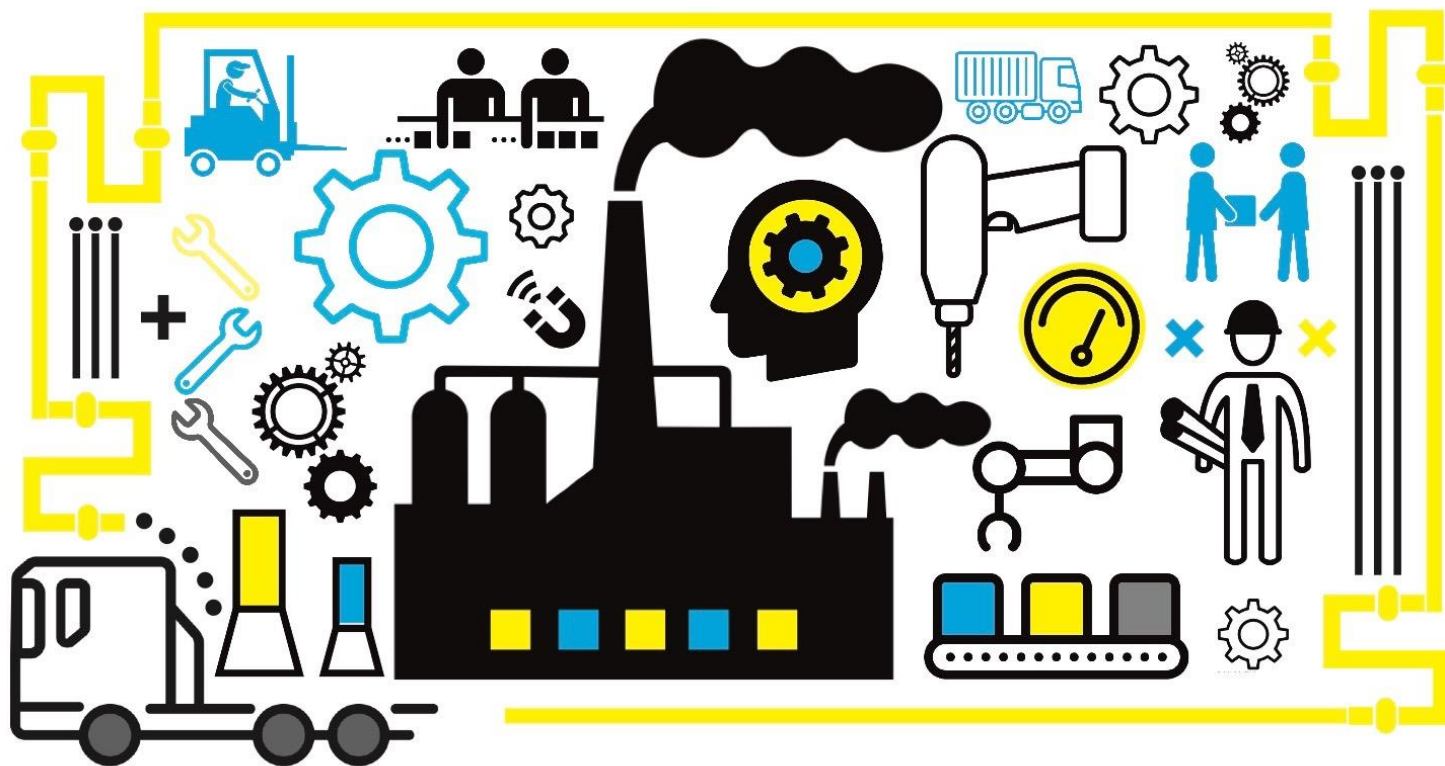
Refrigeration



Distributed Generation



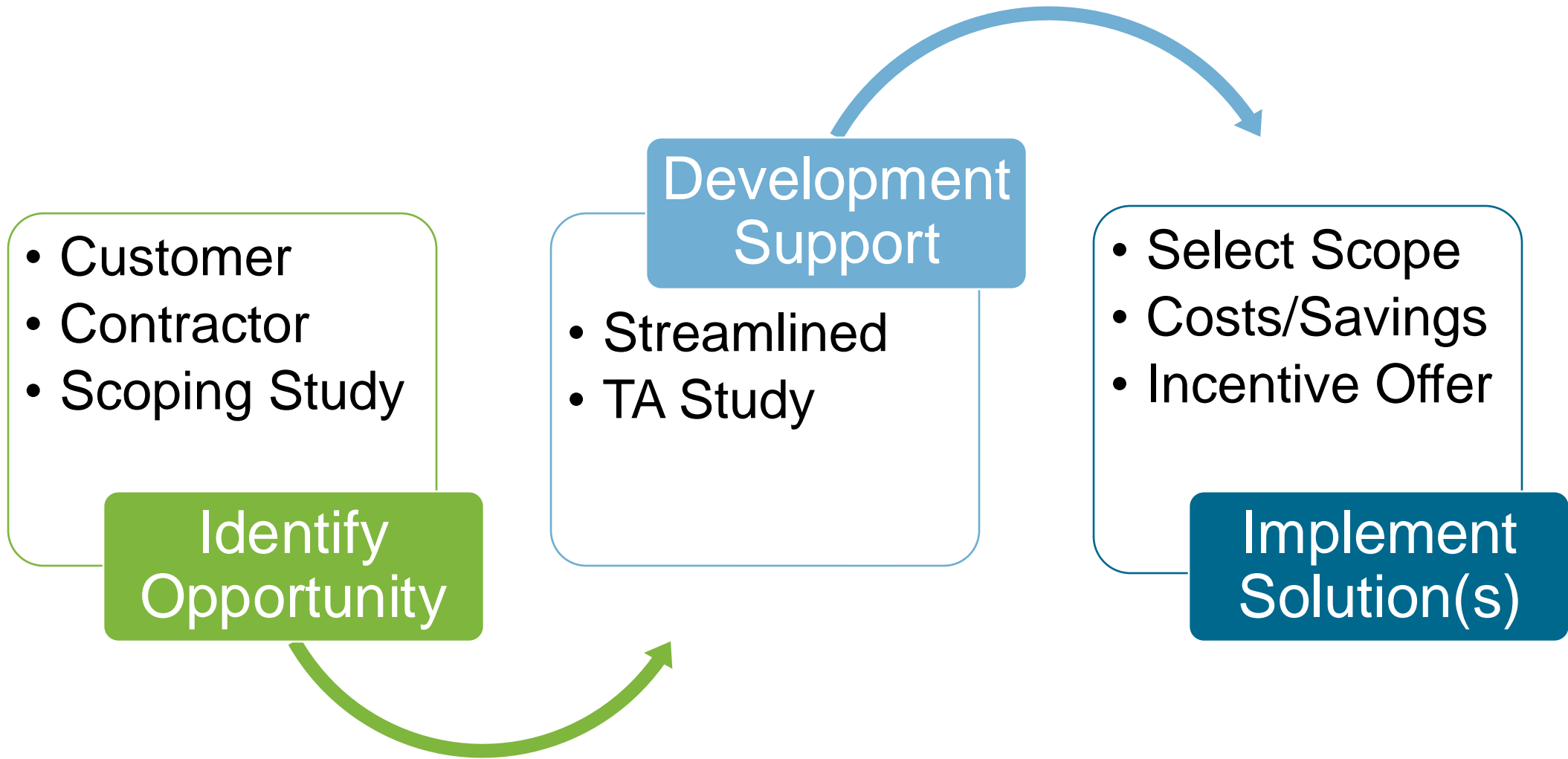
Energy-Related Process Improvements



Why complete a TA Study?

- Provide customer with technical support to define scope, cost and energy savings
- Develop multi-year capital projects plan with firm savings/costs/payback
- Require detailed energy savings analysis, metering and auditing to evaluate baseline and proposed cases
- Approval for energy efficiency incentive from the Utility
- Assist energy efficiency program achieve its savings goals
- Intended for large savings projects generally with a high cost





NHSaves Utility Partners Offers Support at Each Stage to Streamline the Process

Program Funded Scoping Study

Identify Efficiency Opportunities



Perform high level onsite walkthrough



Identify energy conservation measures (ECMs)

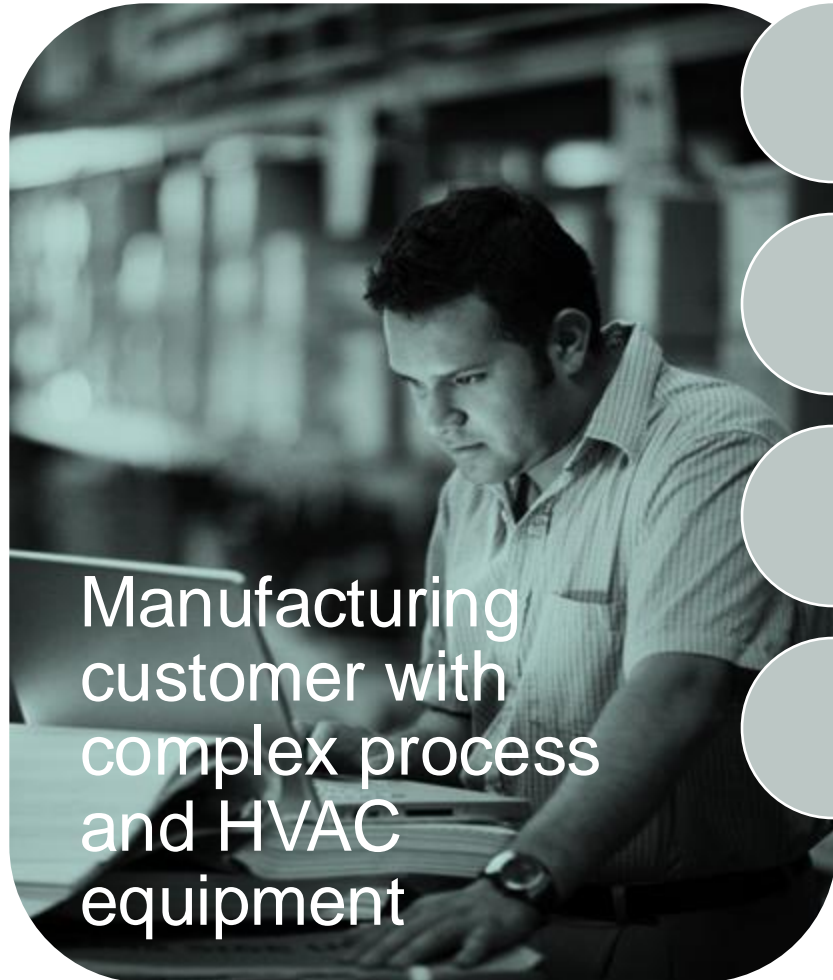


Discuss ECM opportunities with customer



Define project development next steps

Scoping Study Project Example



Manufacturing customer with complex process and HVAC equipment

Interested in carbon reduction and energy efficiency

142,000 ft² industrial facility

Water cooled process and HVAC chillers, boilers, 25 large AHUs, several process lines with nearly 600 kW of fans

Low hanging measures completed, process, energy management system and HVAC focus

Scoping Study RCx Results

Priority measures presented with high level costs and savings.
Additional 14 measures highlighted for follow up.

ECM Name	Cost	Annual Electric Savings (kWh)	Annual Gas Savings (Therms)	Annual Cost Savings	Simple Payback (years)
ECM-1: Electric Process Heat Recovery	\$300,000	310,000	0	\$52,700	5.7
ECM-2: Process Chilled Water Economizer	\$150,000	260,000	0	\$44,200	3.4
ECM-3: Integrate MAU and Exhaust Fans to Process	\$100,000	80,000	6,300	\$19,963	5.0
ECM-4: Retro-Commissioning	\$150,000	350,000	14,000	\$73,640	2.0
ECM-5: High Efficiency Humidifiers	\$100,000	-56,000	19,000	\$9,670	10.3
Total	\$800,000	944,000	39,300	\$200,173	4.0

TA study currently underway. Metering of process lines recently removed.



How do we complete a TA Study?

- Submit application and proposal for pre-approval
- Contact your utility representative for list of preferred vendors. Customers may choose their own vendor with approval from the Utility.
- Initial introduction and kick-off meeting
- Site visit, and subsequent engineering work
- Identify comprehensive opportunities based on customer's interest/capital



How do we complete a TA Study?

- Deliver report, transparent analysis, equipment specifications, quotes, and minimum requirements document (MRD)
- Review and approval by utility representative
- Submit custom application for each measure customer is interested in implementing
- Issue incentive offer for each measure
- Complete work and incentive delivered (post inspection possible)

TA Study Project Example



Large electronics
manufacturing
facility

Strategic partnership with the customer's sustainability team.

500,000 ft² industrial facility

Laboratories, clean rooms, testing and manufacturing areas

Focus on 28,000 ft² lab area with 5 large AHUs

Program Co-Funded TA Study

Project Development Support



Perform detailed energy audit



Partner with contractors/vendors to develop scope



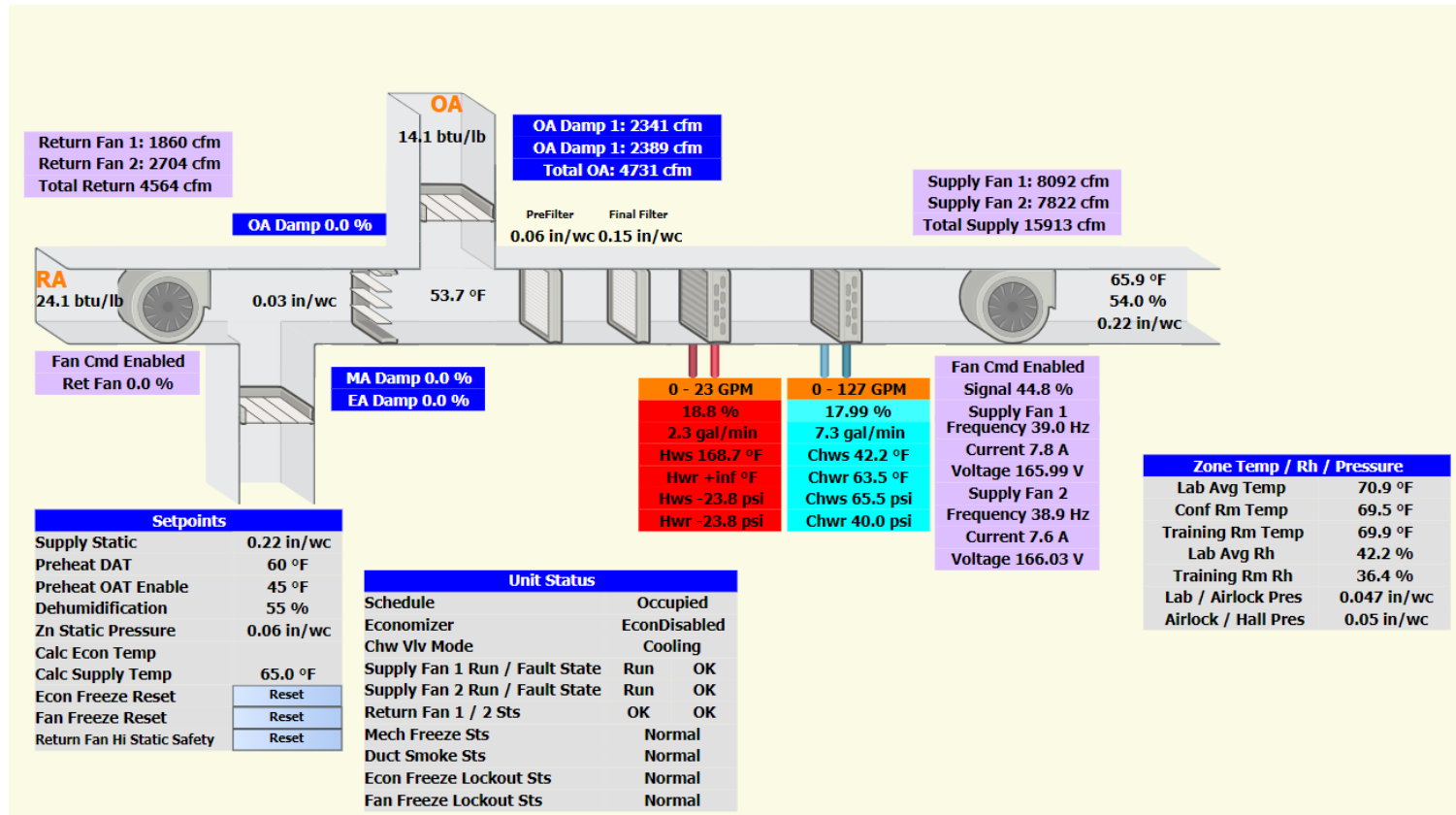
Develop costs and savings for ECMs



Provide program documentation for incentive offer

TA Study RCx

Identified several sequences of operation in partnership with customers internal team and controls contractor.



Preheating and cooling simultaneously because of inefficient sequence and setpoints

TA Study RCx Sequences of Operation

Unit	1. SAT Reset	2. Leaking CHW Valve	3. VFD Airflow Turndown	4. Airflow CFM Balancing	5. Static Press. Optimization	6. AHU Rebalancing	7. Economizer	8. OA Reduction	9. PH Pump Control	10. RH Optimization	11. PH Optimization	12. Zone Double Cooling
AHU-1	X	X	X		X	X		X		X		
AHU-2	X		X		X	X		X		X		
AHU-3	X			X			X	X	X	X	X	
AHU-4	X			X			X	X	X	X	X	X
AHU-5				X			X	X	X	X	X	

TA Study RCx Results

Significant energy savings from only 5 AHUs

ECM Name	Cost	Annual Electric Savings (kWh)	Annual Gas Savings (Therms)	Incentive Offer	Annual Cost Savings	Simple Payback (years)
ECM-1: Retrocommissioning	\$199,216	747,432	95,037	\$64,448	\$223,051	0.6

Customer is planning to perform similar RCx across other AHUs



<https://nhsaves.com/contractors/>

Thanks for listening.

Powered by:

EVERSOURCE

 **Liberty**[®]

 **NEW HAMPSHIRE
Electric Co-op**

 **Unitil**