

Controls Optimization

Jim Piermarini, Eversource

Jeremy Blanchard, GDS Associates

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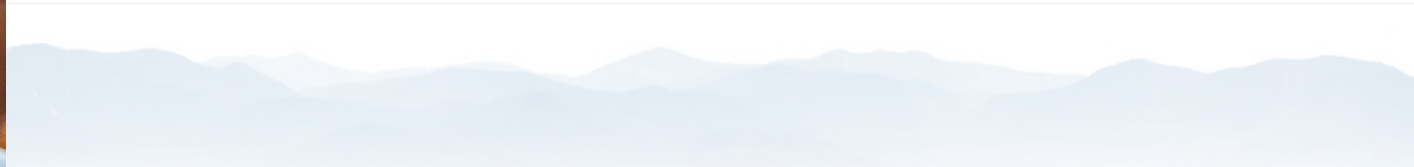
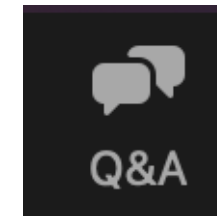
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We look forward to hearing from you

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



Existing Buildings



When optimizing operations through improved control, which approach makes sense?

Controls Do Not Exist



Install new controls on existing equipment to run more efficiently



Controls Installation

Controls Exist

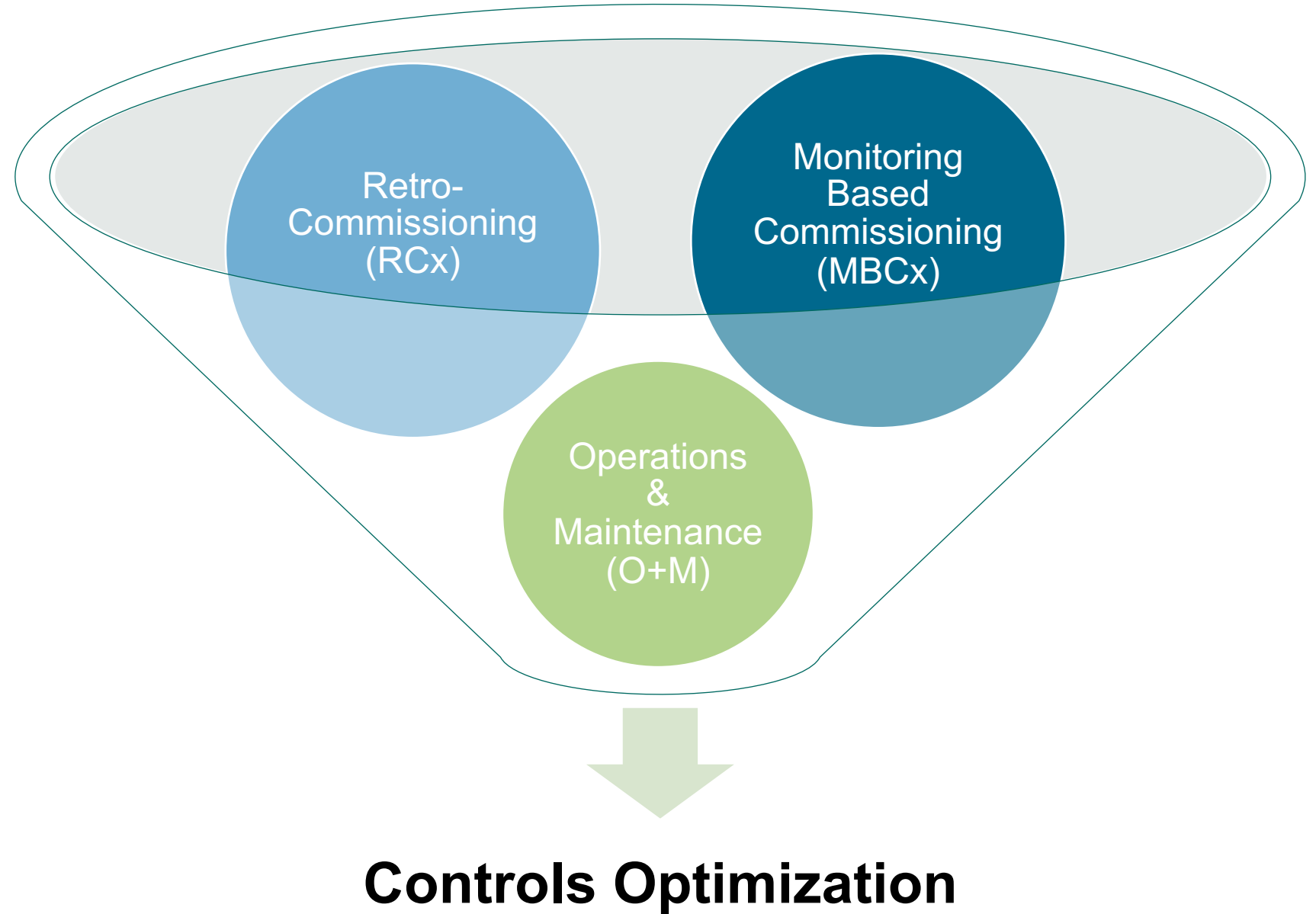


Use installed controls on existing equipment to run more efficiently



Controls Optimization

What is it?

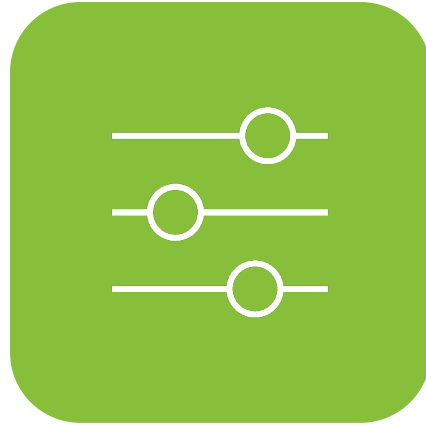


Controls Optimization

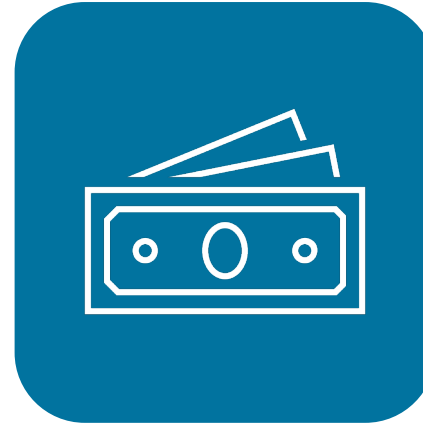
Retro-Commissioning



Improve existing
energy
performance



Changes in
sequences of
operation



Often short
payback projects



Leverage utility
support



Monitoring Based Commissioning

Proactive, ongoing monitoring of systems to detect inefficiencies through **analytics**

Best suited for more **advanced, modern, and proactive applications**

Monitoring is not enough – action must be taken to achieve savings by implementing measures

Common Control Optimization Targets

Overridden setpoints

Simultaneous heating & cooling

Lack of optimal start/stop

Excess outside air

Inefficient economizer sequence

Building pressurization issues

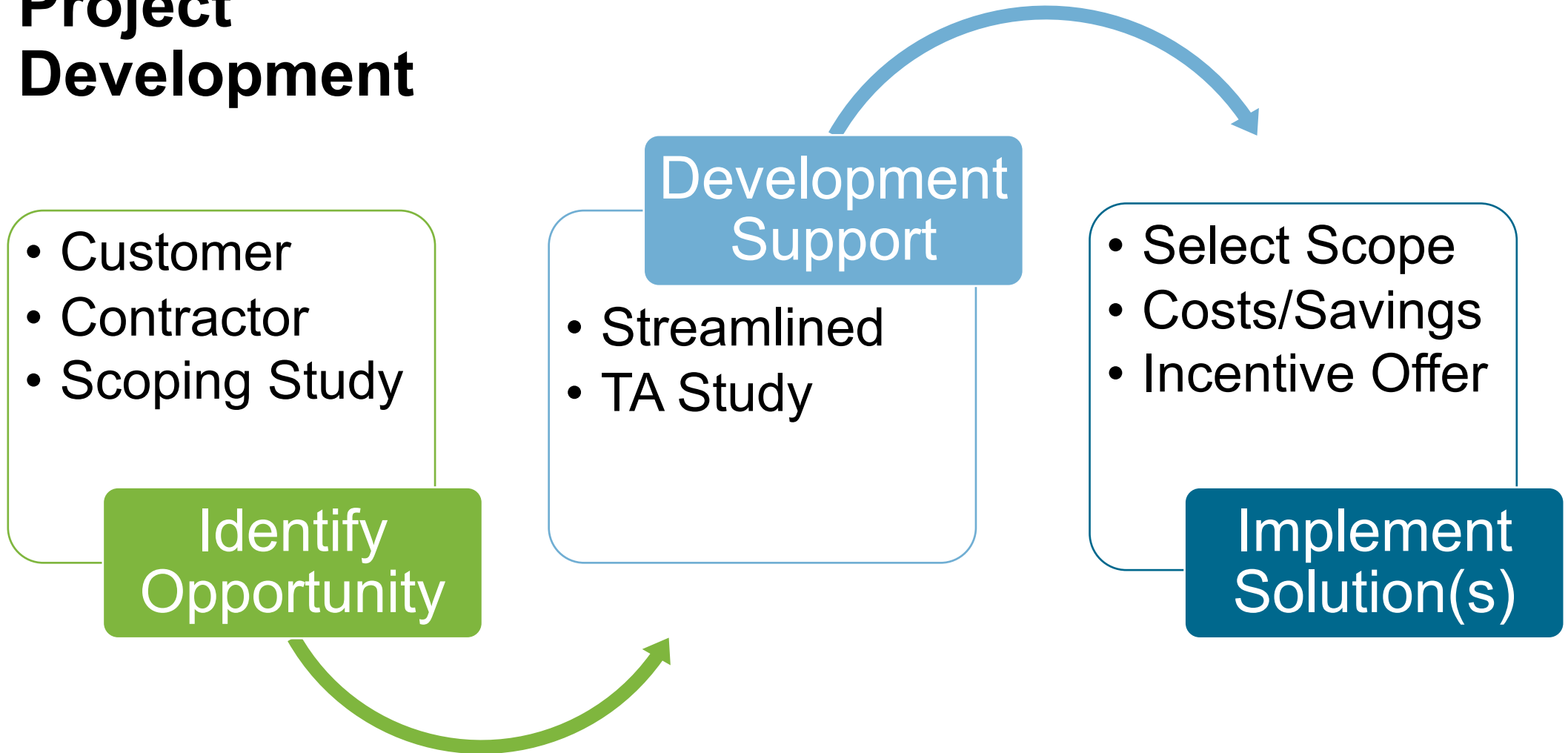
Underutilized reset sequences

Variable speed drives at fixed frequency

Poorly located or failed sensors

Altered occupancy schedules

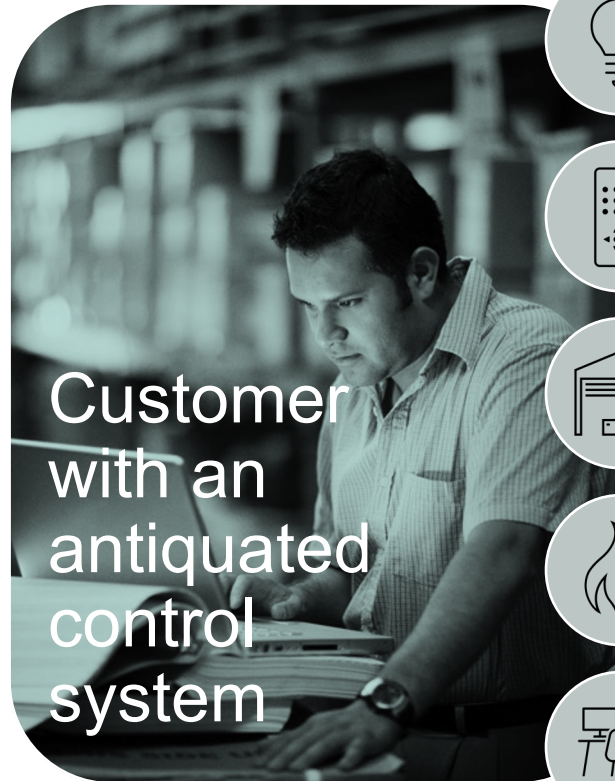
Project Development



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

Retrocommissioning Project Example

Identify Efficiency Opportunities



Customer
with an
antiquated
control
system



Limited program engagement beyond lighting projects



Lack of in-house control system expertise



550,000 ft² warehouse/retail distribution and office building



Warehouse: DX RTUs, natural gas-fired direct-fired Cambridge units



Office: Air-cooled chiller and hot water boiler serving VAV AHUs with reheat fan powered boxes

Program Funded Scoping Study

Identify Efficiency Opportunities



Perform high level onsite walkthrough



Identify energy conservation measures (ECMs)



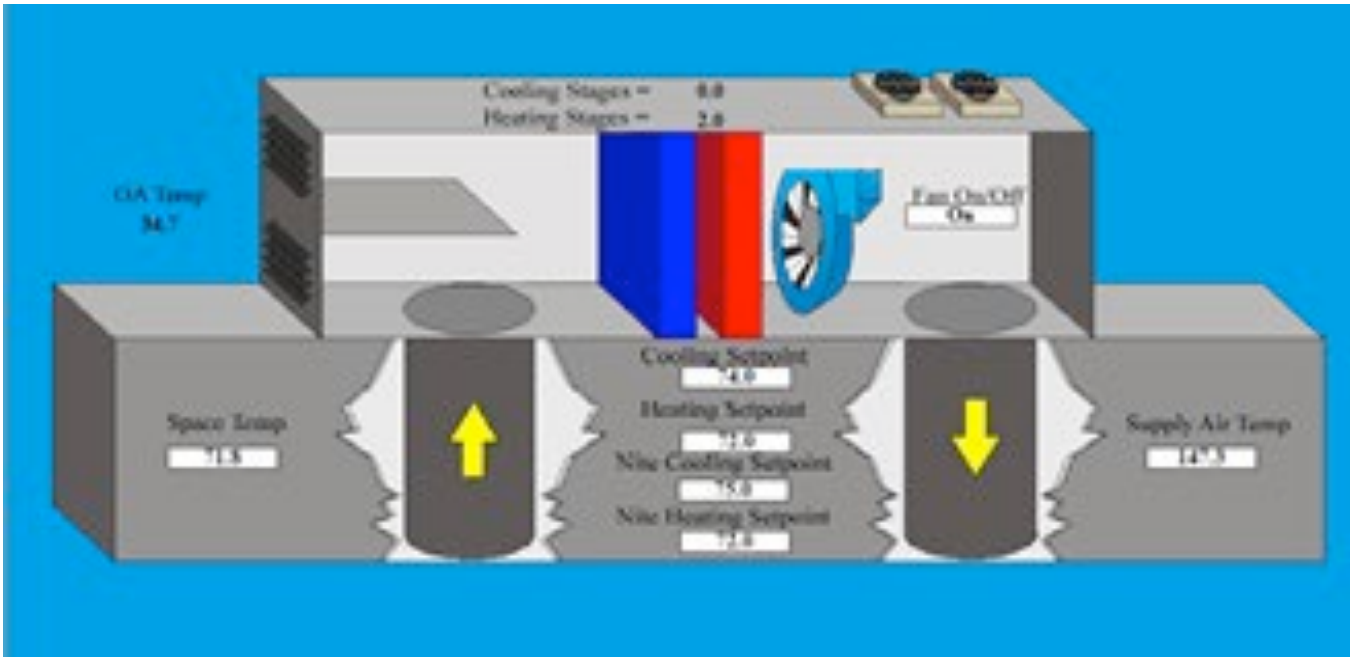
Discuss ECM opportunities with customer



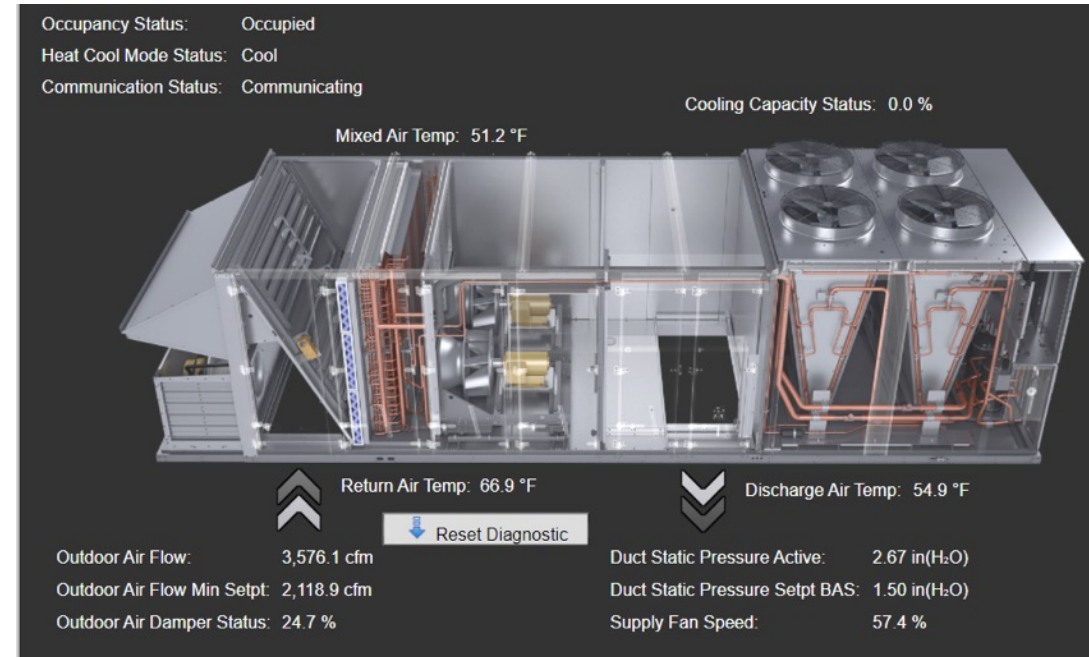
Define project development next steps

Scoping Study RCx Opportunities

Existing Antiquated Graphics

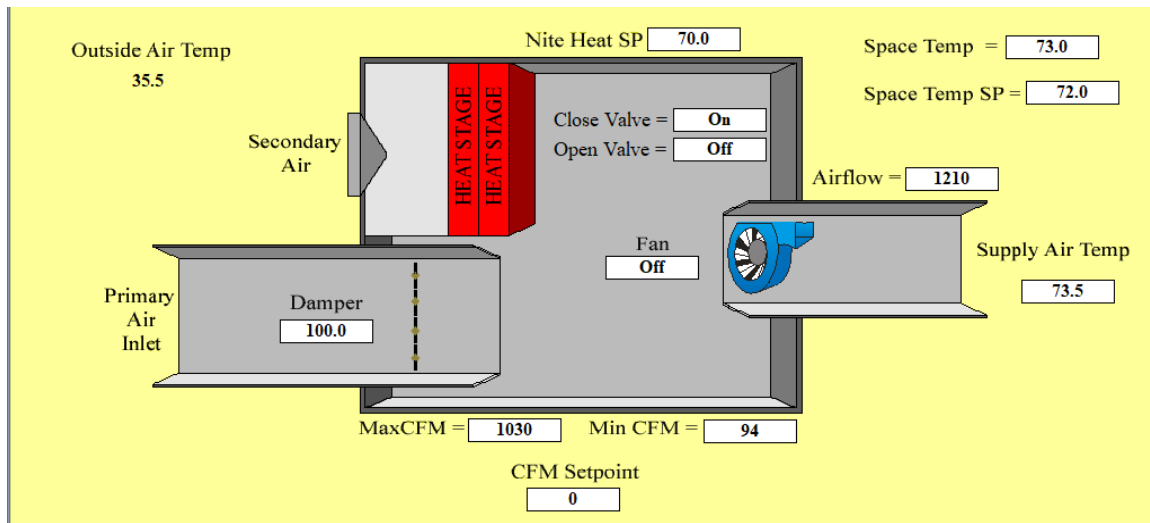


Modern Graphics

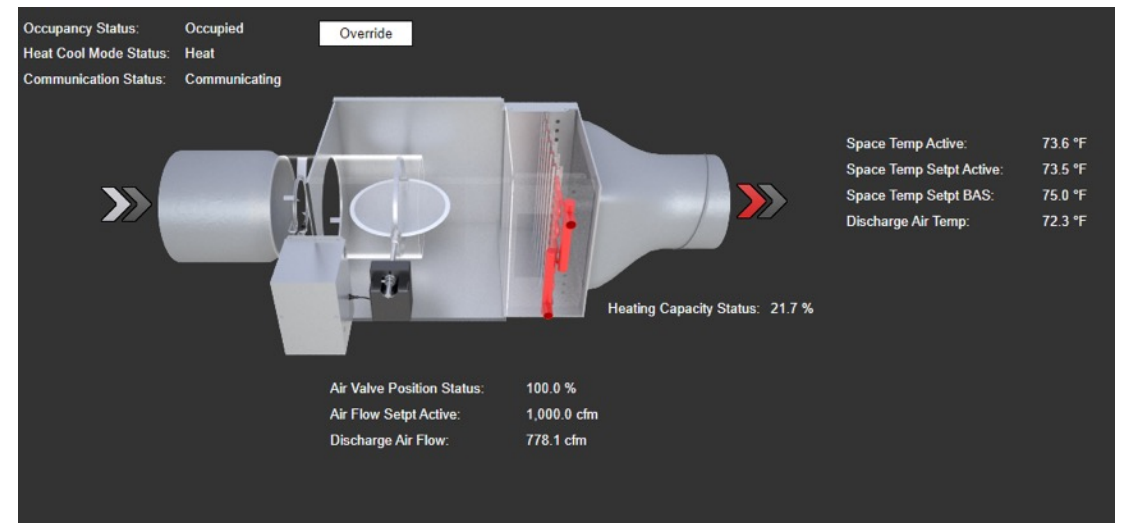


Scoping Study RCx Opportunities

Existing Antiquated Graphics



Modern Graphics



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 Results

Included **5 options** for RCx ECM to assist with capital funding request

ECM Name	Incremental Cost	Annual Electric Savings (kWh)	Annual Gas Savings (Therms)	Incentive Offer	Annual Cost Savings	Simple Payback (years)
ECM-1a: Upgrade EMS and 43 RTUs	\$525,750	471,582	11,128	\$305,449	\$64,747	3.4
ECM-1b: Upgrade Entire EMS	\$260,000	215,499	5,675	\$102,500	\$30,213	5.2
ECM-1c: Upgrade Admin EMS	\$125,000	82,293	4,857	\$53,550	\$14,391	5.0
ECM-1d: Upgrade EMS and 4 RTUs	\$280,000	239,321	6,182	\$118,500	\$33,426	4.8
ECM-1e: Replace 4 RTUs	\$20,000	20,622	0	\$4,000	\$2,315	6.9

Incentive reduces payback by 40%



Incremental cost is difference between baseline (code-compliant) and high efficiency costs for new RTUs. EMS upgrades are a retrofit with full eligible costs.



Eversource

Russell Hunt

Russell.Hunt@eversource.com

NH Electric Co-Op

Joseph Lajewski

lajewskij@NHEC.com

Liberty

Bob Reals

bob.reals@libertyutilities.com

Unitil

Joe Van Gombos

vangombosj@unitil.com



Thanks for listening.

Check out this Webinar for controls overview:

<https://nhsaves.com/webinar-series/>

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