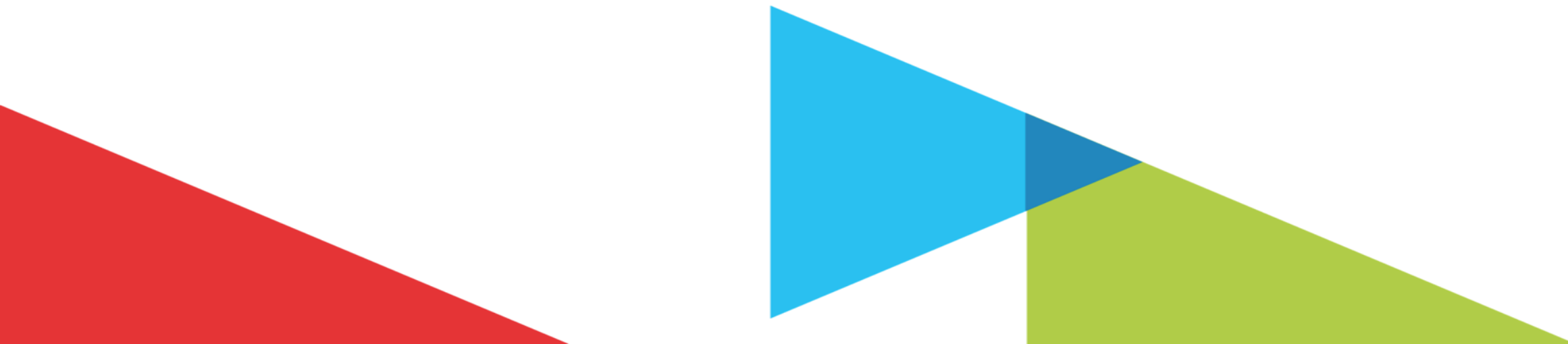


Emerging Technology Update

Presented by Randy Opdyke

February 25, 2019





Idea Generation & Application Process

- Web Based Submission Form
 - Go to: **www.NicorGasRebates.com**
 - Resources > Emerging Technology
 - General Questionnaire
 - Product Specific Questionnaire
- Stage Gate Process
 - Product is Scored
 - Evaluated
- Weighted Scale & Scoring
 - Score of 60+
 - Action Plan to Pilot

4S- A Ready, Set, Go Stage and Gate Process



Criteria	Score	Weighting	Final Score
Cost-Effectiveness	0 to 5	5	0 to 25
Gas Savings Potential (Net Energy Savings)	0 to 5	4	0 to 20
Value to EEP Portfolio	0 to 5	3	0 to 15
Non-Energy Benefits	0 to 5	2	0 to 10
Regional Support and Distribution	0 to 5	2	0 to 10
Technological Maturity	0 to 5	2	0 to 10
Ease of Implementation/Market Adoption	0 to 5	2	0 to 10
TOTAL	-	-	0 to 100



Emerging Technologies Program

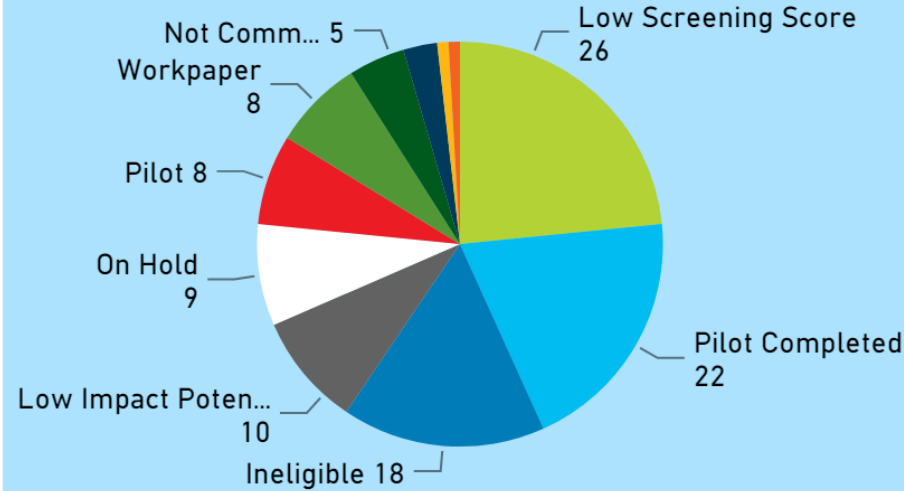
Total Pipeline Projects

109

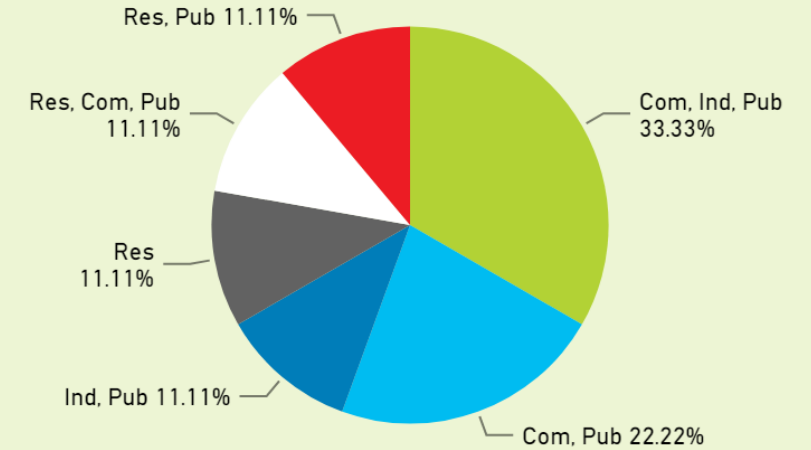
Active Projects

9

Total Pipeline Projects by Application



Active Pilots by Sector



Projects by Pilot Year



Milestone	Task Name	Status	% Complete	Finish
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Milestone	#1134 EcoFurn Lab Testing	In Progress	80%	3/6/19
Milestone	#1115 Boiler Array Site Acquisition (WI, OH, IA) & Study Monitoring Plan	In Progress	60%	3/11/19
Milestone	#1113 Room Air Diffuser TRM Work Paper	In Progress	70%	3/29/19
Milestone	#1085 Boiler Chemical Descaling - Downers Grove Baseline Analysis	In Progress	60%	4/2/19
Milestone	#1119 Venturi Steam - Field Test Site Acquisition	In Progress	80%	4/12/19
Milestone	#1132 Spring Loaded Garage Door Hinge TRM Work Paper	In Progress	20%	4/19/19
Milestone	#1123 Radiator Control Valve - Baseline Monitoring	In Progress	20%	5/16/19
Milestone	#1118 LowE Window Systems - Baseline Monitoring	In Progress	30%	6/3/19
Milestone	#1116 IntelliHot Tankless Water Heaters - Field Data Collection & Analysis	In Progress	20%	8/9/19

EcoFurn



- Uses gas more efficiently, reducing your energy bill by 20%
- Turns single stage residential heating into two stage with simple add on device.
- Markets – Residential Base Furnaces
- Lab Testing currently being performed at GTI



Venturi Steam Traps

- Joint Nicor Gas/SoCal Pilot
- Phase 1 - Laboratory test completed
- Evolved from fixed orifice technology
- Benefits
 - No moving parts
 - Reduced failure rates
 - Long Measure Life
 - Can be installed horizontally and vertically
- Results: Functions on par with mechanical Steam traps
- Manufacturer resistance
- **Next Step: Phase 2 - Field Pilot**



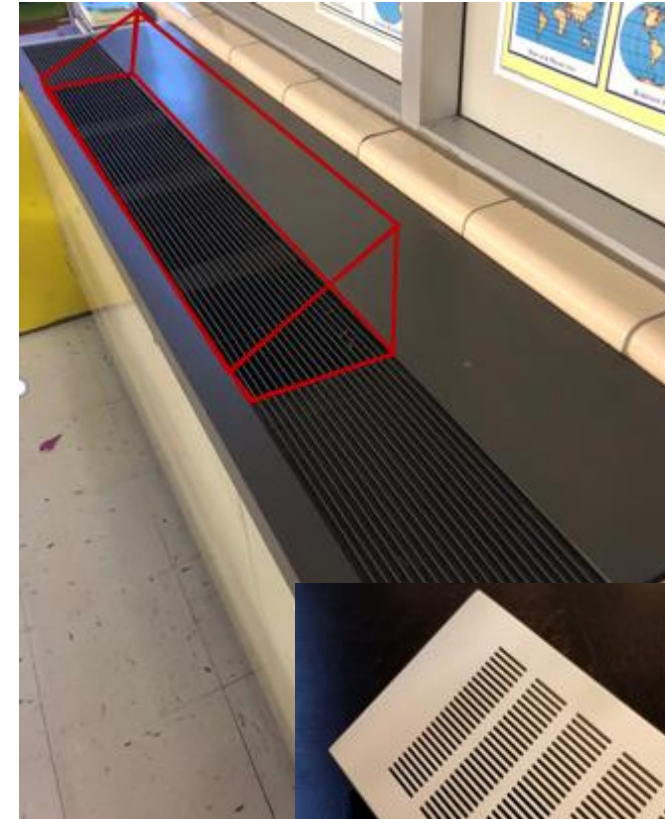
Unit Ventilator Room Air Diffuser



- Sits on top of unit ventilators
 - Can easily self install
 - Several screws attach to the Univent
- Improves air distribution in rooms
- Reduces boiler runtime

Benefits

- 45 vs. 120 minute morning room warm up time
- Increased comfort by eliminating cold & hot spots
- Easy user installation
- Eliminates blocked vents from stacking
- Passive, no electricity consumed
- 16.9% Average Therm Savings
- Downers Grove School Pilot – 12 classrooms
- TRMv8 Workpaper being developed



LowE Interior Storm Windows



- Description: Cost efficient alternative to single pane window replacement
- Benefits:
 - Saves Gas and Electric
 - Reduces drafts
 - Doubles R value
- Target market
 - Residential
 - Single family
 - Multi family

Joint Nicor Gas & ComEd pilot

Oak Park Preschool & Little Friend MF Building



Chemical Boiler Descaler



Dissolves water scale, lime, mud and rust deposits into solution.

Benefits:

- Increases efficiency
- Reduces energy costs
- Increases useful life
- Non-toxic, Non-injurious, Non-flammable, Non-corrosive
- Non-hazardous
- Biodegradable

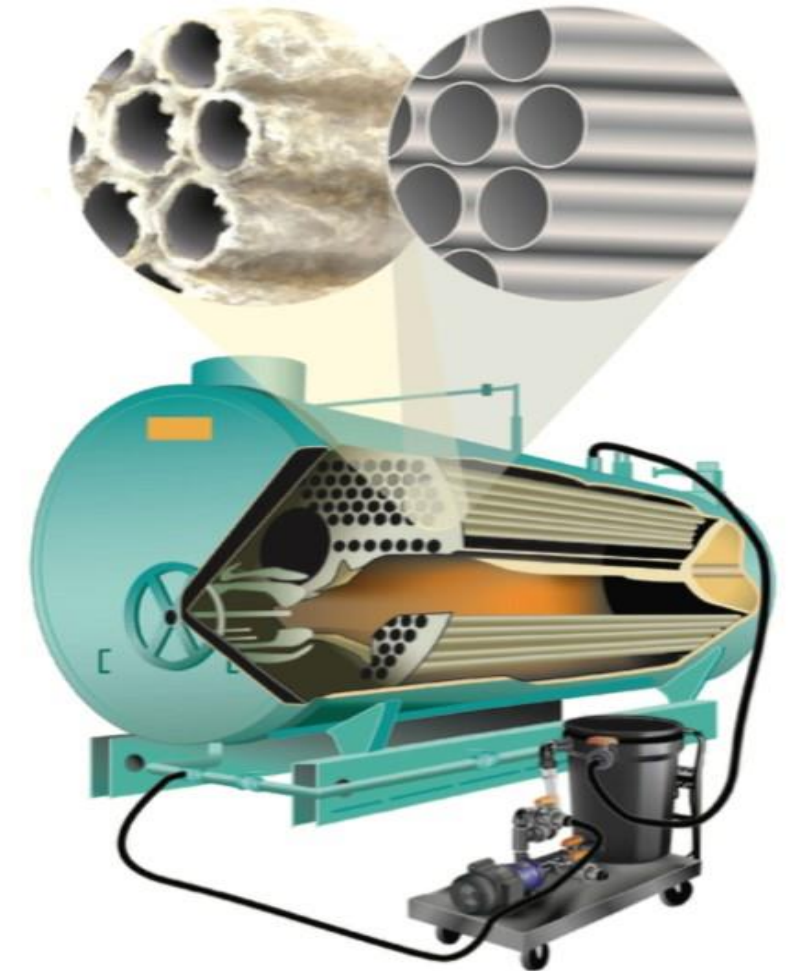
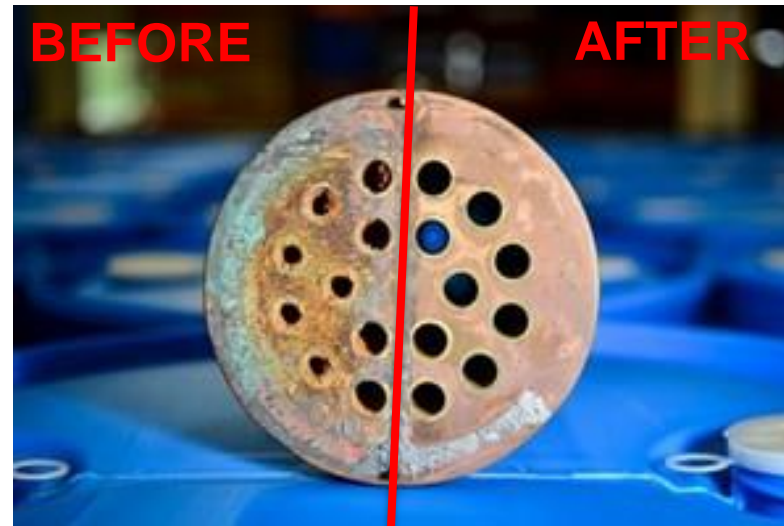
Market: all water based boilers

Fuel Cost Increase

1/16 inch buildup = 11% increase

1/2 inch buildup = 60% increase

Downer Grove School - Baseline Monitoring for Pilot



energySMART
A Nicor Gas program

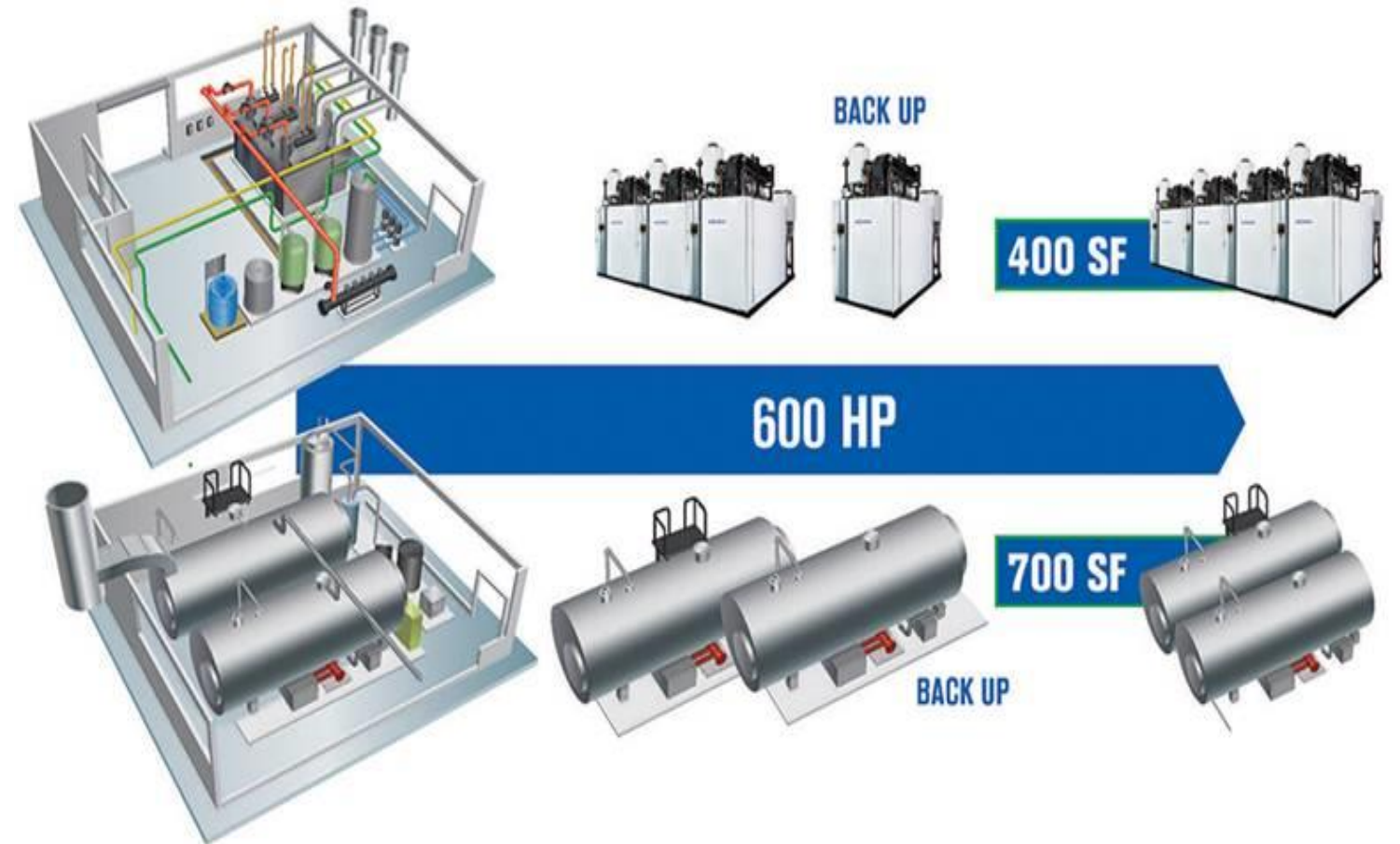


Boiler Array

- Modular technology –
- Demand Response Heating
- Modules from 50 HP to 300 HP

Benefits:

- Reduced gas consumption
- Reduced start up costs
- Reduced standby losses
- Demand response in 5 minutes



Commercial On Demand Hot Water



- **On Demand Hot Water Array**

Description: Instantaneous water heaters
Heat water directly without using storage tanks

- **Benefits:**

- Constant supply
- Reduces standby losses
- Saves natural gas
- Scalable with array
- Handles varying loads
- Size based on need
- Improved reliability

- **Target Markets** – Highrise building, most commercial applications, prisons, colleges & food service

- **Currently performing base monitoring at a customer site**





Small Radiator Valves

Description: controls radiator heating

- Hot water radiators
- Steam radiators

Target Markets:

- Residential
- Large public sector
- K12 schools
- Government buildings
- Multi-family buildings
- Single family homes

Pilot Sites

- Single Family (Hinkley, IL)
- Downers Grove School





Questions?

Randy Opdyke

Manager, Planning, Evaluation

and Analytics

630-388-2063

rwopdyke@southernco.com

Gary Cushman

Program Manager

(630) 388-2392

GCushma@southernco.com

