Energy Efficiency Committee Meeting
October 11, 2016
BPU, Trenton
Meeting Minutes

Regulatory Updates (*Sherri Jones)*

- Within the next 2 weeks, the True-up budget will be finalized and sent out for comments. Should be on the November Board agenda.
- The updates to the Contractor Remediation procedures have been sent out for comments and are due back by Oct. 19th.
- A Meeting will be forthcoming w/stakeholders for input about Strategic Plan.

Presentations:

(1) Rick Nortz of Mitsubishi Electric and Mike Psihoules of Fujitsu General presented an overview of **ductless heat pump technology**, current industry trends, and reviewed what other Northeastern states' incentives offerings are for this technology. The presentation focused on Air-source Ductless Minisplit Heat-pumps. Goal is to advance the technology and create greater awareness with a focus on Residential technology.

- In NJ, 48% of all household energy use is for appliances and 52% is for heating and cooling. Of the 52% for heating and cooling, 48% is consumed by heating and only 4% is for cooling.
- Currently, worldwide, ductless heat-pump technology has only 8% penetration in the US while Europe is 73%. Cost of energy in rest of world is high. It is still in It's infancy in USA. 6 years ago, the US heat-pump market was only 3%. Currently, it's the fastest growing sector in HVAC community and projected to grow to 20% by 2020.
- In the past, the common installations were 1:1 (one unit per room) systems. The room over the garage, the basement, etc. (niche applications). People viewed this product as that. Now, the technology is being viewed as a whole-home solution that can do a 3,000 SF house.
- In the past the unit's achieved 10 SEER now up to 33 SEER. Improving performance at low temperatures. In the past, back-up heating was required at 32 degrees F while now 100% capacity at 5 degrees F. In NJ, Fujitsu design temperatures is 14 degrees. If a house needs 60,000 BTUs at design temperature, then the system needs to match.
- Up to 8 indoor units can be linked together and mix and matched. The public is used to zoning their plumbing/electric, but not their HVAC. Rooms that get less use, the temperature can be turned down so it doesn't consume as much energy.
- Inverter vs. Normal Heat-pump.
  Normal – It's on at 100%. Ex. 36,000 BTUs. Rarely properly sized so cycling starts. A system that is on is more efficient than system that cycles.
  Inverter – adjusts output to meet the demand of the house. Ramps up to rapidly heat or cool the room. Ramps down and matches the load. Burning 1/3 the power to maintain the room's temperature. And in cooling mode, acts as a dehumidifier.

- Heating & Cooling hours:
  In NJ, 58% of the year is heating and 25% of the year is Cooling.
- Measure efficiency of a Heat-pump against electric resistance. COP (Coefficient of Performance) of 4 at 57% of winter temps.
- NEEP – Cold Climate Heat Pump Specification
  In 2013, NEEP (Northeast Energy Efficiency Partnership) assembled a working group with the goal to understand how to accelerate the adoption in the Northeast. Identify a standard specification to help contractors size and implement installations. A number of utilities are now adopting it. Several manufacturers are participating by sharing performance data at very low ambient temperatures. The unit needs to achieve a COP of 1.75 at 5 degrees F or better to be eligible for the ccASHP Specification.

  Question – What's the technology that has changed to make these units so much more efficient?
  Answer - Larger condenser and algorithms that modulate the system. The software is improved.

Northeast Ductless Incentive Programs

- Efficiency Maine: 12 HSPF: $500 (Multi-zone) 10 HSPF: $500 (Single zone)
  The Industry is moving to these multiple head systems for whole-house applications rather than single-room applications. Other Northeastern states EE programs are realizing this and are designing tiered incentives for these multi-head systems. For example,
- Efficiency Vermont: ccASHP: $800 (Multi) ccASHP: $600 (Single)
- Energize CT: 18 SEER/9 HSPF: $300 (Multi) 20 SEER/11HSPF: $300 (Single)
- ConEd: 18 SEER /12.5 EER/9 HSPF: $150 20 SEER/12.5 EER/9 HSPF: $400

NJCEP HVAC COOL Advantage

The current HVAC offerings in NJ Clean Energy offer Multi-tiers in other HVAC systems except for the mini-splits

- Recommendations:
  Is EER the right metric?
  Several states have been moving away from EER. Massachusetts, Maine, Vermont, Rhode Island, CT have dropped EER.
- Create another Ductless Mini-Split Tier
  Create a multi-zone tier to broaden the offering.
  Create a ccASHP tier

Future Presentation for Commercial Heating & Cooling using VRF
Huge Opportunity – very low refrigerant

Questions:

1. What's the approximate cost premium for the cold-climate vs. the standard?
   Answer - 10 to 15%.
2. One issue that ductless units have had in the past is that it doesn't pass the "cost effectiveness" test when compared to other A/C systems such as a room A/C?
   Answer – True, that's why you need to look at the entire life-cycle cost. It's not a 2 year pay-back.
3. What is the discharged air temperature on the heating side? At the vent where air is coming out, what would be the discharge temperature?
   Answer – 140 degrees F.

4. What's the estimated life of these compressors?
   Answer - Could be up to 30 years. They've been around for a long time.
5. In a retrofit situation, when would this apply? How do you convince someone to replace both? If furnace breaks or just A/C breaks, why would I want to install these? Are there target markets for these?
   Answer – Need a customer who is a planner. Keep in mind that a lot of homes in Northeast don't have Central A/C ducts. Often times it's a like for like replacement when one unit breaks (furnace for furnace).
6. With only 8% market share, what is the warranty and contractor network like?
   Answer - Base warranty is 12 years on parts if a Fujitsu trained "Elite" contractor has installed it. In 2015, they trained over 18,000 techs.

Bruce Turner and Cardie Saunders of eTemp presented an overview of **commercial refrigeration thermostatic control technology**. The presentation reviewed the patented eTemp technology and its ability to reduce energy consumption, extend mechanical life and create safer food storage in the commercial food sector.

- Refrigeration is a technology that hasn't changed too much. eTemp is made to mimic the thermal properties of food/beverage rather than the volatile properties of air. It's a sensor that retrofits over the top of the existing thermostat.
- eTemp is a food safety device company. Average product temperature stored in a refrigerator/freezer before the use of eTemp is 38.24 (F) and average the device is installed product temp after 36.88 (F).
- Device helps to conserve energy by cutting compressor starts by 50% which results in energy consumption savings on average by 24%. The device is NSF certified - National Sanitation Foundation.
- Technology is being used in hotels, stadiums, fast-food restaurants and elsewhere. eTemp conducts a customized site-survey at each facility. The technology typically pays for itself in 2 years or better (ROI). It works with many different systems like Honeywell, Johnson Controls, etc.

<u>Questions:</u>

1. What is the product and what does it do?
   Answer - Thermostat feels cold air and adjusts according to the air temperature. Engineered the inside of the product to mimic the surface of food. Slides over the thermostat bulb. So rather than adjusting to air it adjusts to the food surface.
2. How is this product different from NRM control? They have a control similar to this that takes over the thermostat?
   Answer - I'm not familiar with that product.
3. How much is the device?
   Answer - $891 sold via Grainger.
4. Are there any State Utility programs promoting this?
   Answer – No, but we are starting to look at it. It's too fast of an ROI.
5. How long does it take to install and is it complicated?
   Answer: On average, 30 minutes.
6. What kind of competition do you have?
   Answer: Band controls and similar systems.
7. What are you looking for from the NJ BPU?
   Answer: TRC to look at the technology for programs.
8. How does product know the difference between say wine and chicken?
   Answer – It doesn't need to know the temperature of every product that is in the fridge, instead the algorithm senses the widest air band.

9. Without incentives, how applicable is this product?
   Answer: For large energy users, It's effective. A mom & pop, can't get there without a rebate as it's a high implementation cost. 4 to 5-year ROI for small locations.
10. Do you need corporate approval or franchise approval to sell and install the product?
    It depends who owns the location, corporate owned vs. private owner.

Stakeholder Meetings (Jim Grevatt)

Jim gave an update on the status of the Strategic Plan and Stakeholder Meetings. The AEG program team is gathering names of past participants and known stakeholders in various markets. Meeting w/BPU staff next week to seek approval to start holding stakeholder meetings in first part of November. Also, AEG may create an email or web link for stakeholders to provide feedback. The goal is to first solicit feedback from stakeholders to hear how the current programs are doing before we begin discussing implementing any changes and new ideas.

NJCEP Program Updates (Marybeth Brenner/Janja Lupse/Kenn Latal)

C&I – MaryBeth Brenner of TRC

SmartStart Retrofit & NC

Over 430 projects approved in September representing $3.7M

Direct Install

Launched September 15th. Received 30 project submittals as of October 5th
20 Aps approved for a total commitment of $389K

P4P – NC

Partner "re-training" webinar held 9/22 - 62 attendees representing over 40 companies
On-Demand training module anticipated for December release
5 applications received under the new program
Backlog of projects from prior year have higher than average incentives therefore $3M budget transfer requested to meet demand

LGEA

52 entities enrolled, representing 460 buildings and over 15 million SF.
24 of 52 entities have shown interest in ESIP
$500K budget transfer requested to meet demand

Question from Anne-Marie Peracchio – There used to be a $100K limit, is that still in force?
Yes, can go to Board to increase that cap.

Residential HVAC Changes

Permit number or a copy of the permit application required w/WARM/COOLAdvantage apps.
A copy of the AHRI certificate must be submitted with WARMAdvantage apps.
Manual J load calcs for heating systems required and equipment must be selected in accordance with ACCA Manual S.

Outreach Update

- CRM Customer relationship tool has been launched.
- Utility/NJCEP monthly call established to collaborate on both Residential and C&I programs.

- Outreach Team participated in 36 community and association events in September.

Question - Where do the leads go that your outreach coordinators generate?
Answer - The account managers lead them to the appropriate program to meet their needs.
Sherri: The NJCEP website has the trade ally list of contractors participating in the programs. Can steer them there or to the program manager overseeing each program.

Question - Any updates to the product side?
Mike Ambrosio (AEG) Answer - Waiting on a contract mod for the dehumidifier and room a/c recycling add-on.
Sherri Jones (BPU) Answer – TechniArt online store should launch in a few weeks.

Anne Marie Peracchio (NJ Natural Gas): I see that this meeting is switching to every other month and where will the metrics be posted so that we can see tracking for reporting?
M. Ambrosio Answer – The metrics will be posted soon and we are still deciding the format.

Anne Marie follow-up - With respect to budgets and budget pressures, how will we get warning when certain budgets are getting over-subscribed?
M. Ambrosio – We are requesting budget mods for a few of the programs as you heard earlier.

Question - Are lighting fairs and community events posted to the website?
S. Jones Answer - We are discussing it internally, but it's not in place yet. Not all lighting fares are open to the public. They are posted on TechniArt's site and color-coded for which ones are open to the public.

Question – In California, Title 24, was the criteria for a lot of the work that came to the East Coast. The DLC in California is higher than the rest of US. Some of the products are not used and I'm not seeing them used. How will that work with the DI contractors?

Carl Teter (TRC) Answer – First of all for the Prescriptive programs, and the core suite of programs, we can look at the different technologies and see if it makes sense for the programs. DI needs to establish pricing on a standardized basis. Need to understand if there is demand from contractor's customers.

Utility Updates

- NJNG – Push to support programs with the Manual J and Manual S changes. It's in our monthly newsletter.
- ETown – Manual J training Friday 10/14.
- SJG – 9/30 hosted a training for HVAC contractors. EH-CC attended, over 40 contractors.

Other Business/Next Meeting December 13, 2016