

National Governors Association Policy Academy – Illinois Participation

Presentation to SAG

Tuesday, March 19th, 2013

John Cuttica, UIC/ERC

Eric Heineman, Governor's Office

Agnes Mrozowski, Illinois DCEO

Presentation Outline

- Introduce NGA Policy Academy Project
- Introduce the Concept of CHP as an Allowable Technology Under EEPS (initial reactions)
- Next Steps
 - SAG input to NGA project
 - What needs to be done to continue the process of CHP incorporated into EEPS

National Governors Association (NGA) Policy Academy

- NGA Policy Academy

- A targeted technical assistance program offered by NGA and its expert national faculty
- Work with selected states to identify and develop long-term policy and program changes to positively impact specified areas of interest
- Illinois is one of five states selected under a competitive procurement to participate in the NGA Policy Academy entitled:

“ Enhancing Industry Through Energy Efficiency and Combined Heat &Power”

Illinois Team

- State Team :
 - Governor's Office --- Eric Heineman
 - DCEO --- Agnes Mrozowski (David Baker, Byron Lloyd)
 - ICC --- Jon Feipel (Torsten Clausen, Jim Zoinierek)
 - Illinois EPA --- Kevin Greene
 - ERC (tech advisors) --- John Cuttica / Cliff Haefke
 - NGA Coordinator --- Sue Gander
- Utilities Contacted:
 - NICOR --- Jim Jerozal
 - Peoples --- Patrick Michalkiewicz
 - ComEd --- Tim Melloch
 - Ameren --- Keith Goers
- MEEA --- Jay Wrobel

Develop an Implementable Action Plan for the Governor by April 30th, 2013

- Role EE and CHP can play in assisting Illinois public sector/industries
- Analyze barriers to greater investment & implementation of these technologies (EE and CHP) by the industrial sector
- Recommend policy and program changes to enhance their effectiveness, including but not limited to:
 - Regulatory & financial incentives
 - Education & outreach activities
 - Technical assistance
 - Partnerships/collaborative approaches

Activities to Date

- Brief utility sector representatives (Nov. 28)
 - Identified challenges for group to address
- Consult with IL EPA on Boiler MACT outreach (Feb 14)
 - Working UIC/ERC to roll out tech. assistance program
- **Brief Stakeholder Advisory Group for the IL EEPS (March 19)**
 - **Will present ideas on incorporating CHP into EEPS 3yr plan**
- Brief manufacturing sector representatives (Mid-March)
 - Will explore partnering on outreach and education with trade associations, assisting efforts on Boiler MACT compliance through CHP, discuss key strategies
- Two Policy Academy Mtgs:
 - Portland October, 2012
 - Philadelphia March, 2013

Premise for Illinois Participation in the Policy Academy

- State EEPS Program (administered by the investor owned utilities) is the single largest opportunity within the state for increased Industrial EE
- EEPS annual efficiency targets becoming much more difficult to meet
- Greater industrial sector participation is one of the keys to the future success of EEPS
- How can we increase industrial participation in EEPS through policy and program changes (can CHP be a contributor)?

Goal 1: Identify mechanisms to increase industrial sector participation and investment in EE.

Strategies:

- **Enhance industry education & outreach** to increase participation in EEPS programs
- **Add CHP to EEPS program (not currently included)**
- **Examine EM&V modifications** to facilitate greater participation in EEPS programs (e.g. consistent protocols, credit for behavioral programs, treatment of targeted programs)
- **Help advance larger projects and/or aggregation of projects** that better address industrial needs (process not facility oriented)

Goal 2: Identify mechanisms to advance the use of CHP in the industrial & large institutional sectors

Strategies:

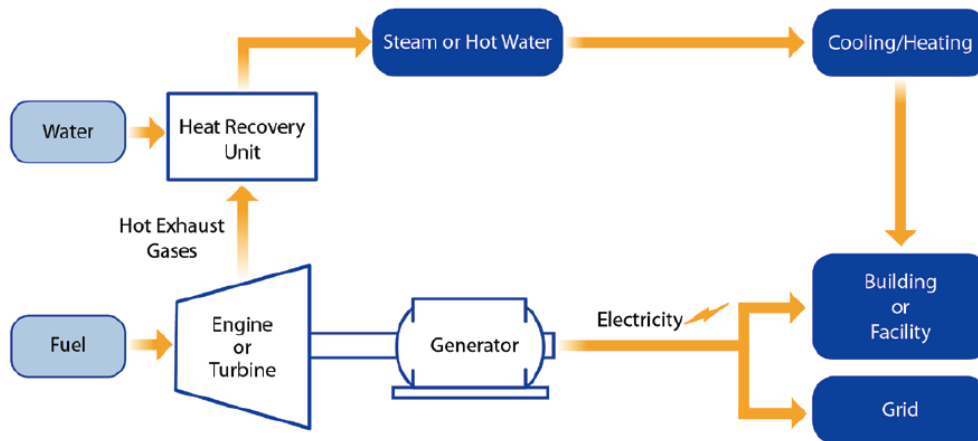
- **Add CHP to EEPS** program and **WHP/CHP to RPS** program
- Provide greater **education for industry on benefits & application of CHP** (e.g. webinar series)
- Participate in **implementation of DOE Boiler MACT Technical Assistance Program** in Illinois
- **Explore CHP “permit by rule”** (streamline process)
- Integrate CHP into **critical infrastructure planning**
- Review **SEEAAction CHP Policy Guide** for IL option

Defining Combined Heat & Power (CHP)

The on-site simultaneous generation of two forms of energy (heat and electricity) from a single fuel/energy source

Conventional CHP

(also referred to as Topping Cycle CHP or Direct Fired CHP)



Separate Energy Delivery: 45% to 55%

- Electric generation – 33%
- Thermal generation - 80%

CHP Energy Delivery: 70% to 85%

- Simultaneous generation of heat and electricity
- **Fuel is combusted/burned for the purpose of generating heat and electricity**
- Normally sized for thermal load to max. efficiency – 70% to >85%
- Minimum efficiency of 60% normally required
- Normally non export of electricity
- Low emissions – natural gas

Some Questions for Including CHP in EEPs:

- Must pass TRC Test!!
- Should Incentives be on Electric Side, Gas Side, or shared?
- How do you Calculate Energy Savings?
- Estimated versus Actual Savings?
- Can CHP Significantly Assist in Meeting Targets?
- How do you control size of CHP incentives?
- Is it Fuel Switching and How do you Handle that?
- What Have Other States Done?

Add CHP to Illinois EEPS Program??

- Over 20 states specifically call out CHP in either their RPS, EEPS, or AEPS.
- Arizona, Maryland, Massachusetts, Rhode Island, Connecticut, Ohio all have conventional CHP under their EEPS program
- Most other states include WHP/CHP as part of their RPS and/or EEPS
- Under EEPS Programs, the CHP systems are incentivized as electric energy efficiency measures.

Calculating Savings

$$S_{\text{fuel CHP}} = F_{\text{grid}} + F_{\text{thermal}} - F_{\text{CHP Total}}$$

EPA Emissions Calculator can be utilized to calculate $S_{\text{fuel CHP}}$

<http://epa.gov/chp/basic/calculator.html>

$$S_{\text{elec CHP}} = S_{\text{fuel CHP}} / H$$

S = Savings

F = Fuel

H = Heat Rate – Btu/kWh (grid, CHP system, or standard conversion

- Depending on value used for H, provides very favorable, very conservative, more realistic values.
- Based on the above, we came up with what we are recommending to Ohio – Threshold/Tiered approach

Threshold/Tier Approach (proposed Ohio)

Efficiency (% LHV)	Portion of MWh output considered savings
< 60	0%
60-65	60%
65-70	70%
70-77.5	80%
> 77.5	100%

- Does not pick technology winners
- Encourages project developers to design higher-efficiency installations, regardless of the prime mover technology
- Is based on the performance of real CHP systems, of various sizes, configurations and technologies
- Is simple to administer and implement
- Neither under-estimates nor over-estimates savings

Example – based on actual site

- 6.3 MW Turbine with HRSG (has duct firing)
- Operates 8760 hrs @ 96% availability (50,793,170 kWh)
- Unfired Thermal Output (no duct firing):
 - 2,638,916 Therms; produces 37% of steam load; CHP system efficiency is 80.4% (LHV)
- With Duct Firing:
 - 6,126,695 Therms; produces 85% of steam load; CHP system efficiency is 87.9% (LHV) --- remaining 15% provided by 82% efficient boiler.
- With threshold/Tiered Approach:
 - 50.8 million kWh allowed as savings
 - At \$0.07/kWh – could get up to \$3,555,522 in incentive
 - BG&E limits incentive to \$2M --- this case would be \$0.039/kWh
 - Cost of this type project vary greatly (\$9.5M to > \$20M)

Summary & Next Steps (CHP):

- Several states (AZ, MD, MA, RI, CT, OH) have conventional CHP as part of EEPS
- CHP can provide significant energy savings towards target goals
- CHP as part of EEPS – many questions to be evaluated further
- CHP next steps:
 - Should we move forward in evaluating CHP as EEPS option? And how? UIC/ERC can provide approach.

Questions/Discussion