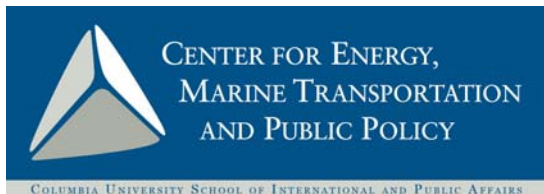


Interconnection / Stand-Alone Capability

CHP in NYS

Stephen A. Hammer, PhD
Director, Urban Energy Program
sh2185@columbia.edu



Interconnections



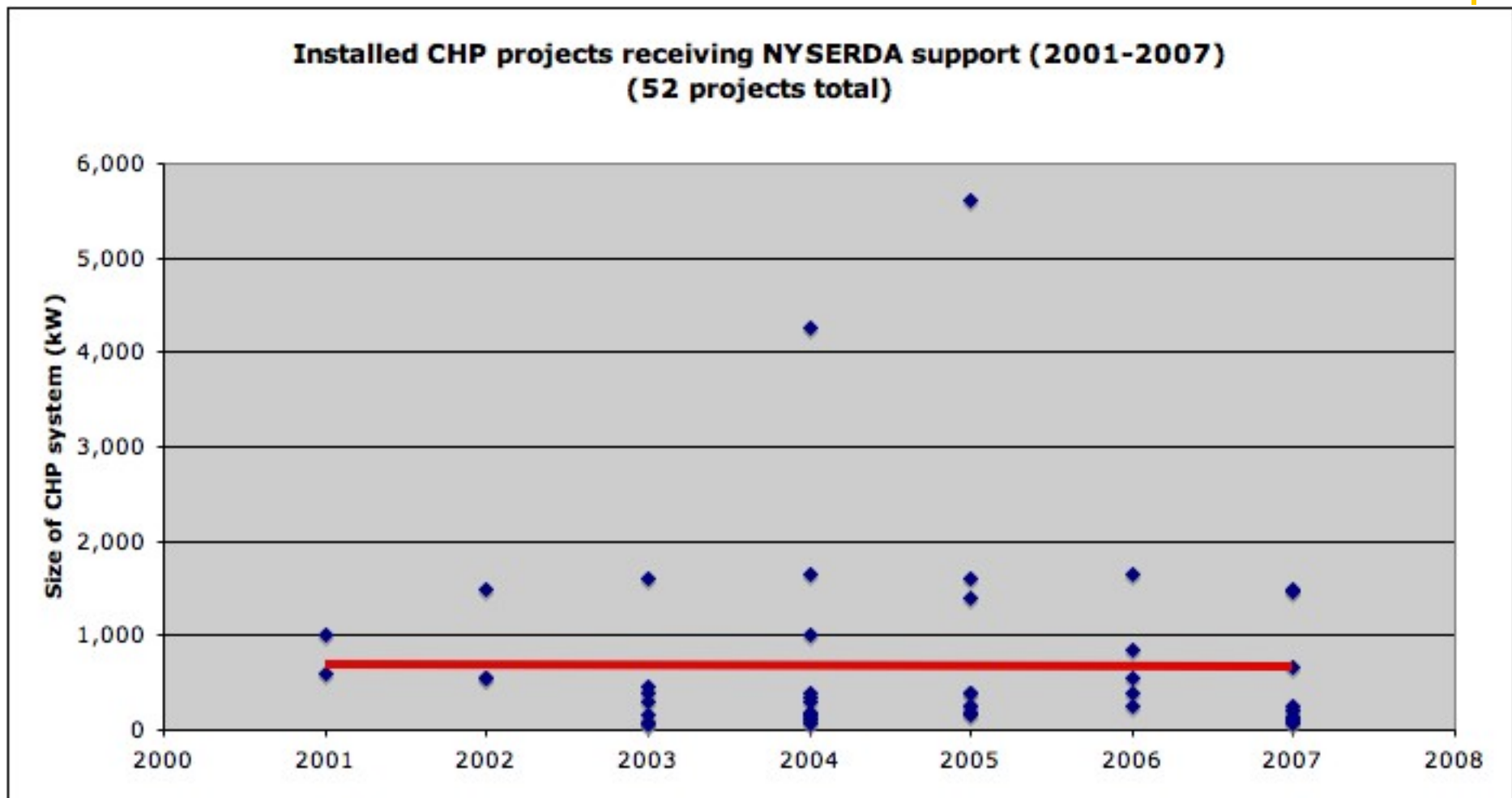
⇒ Key issues

- Knowledge imbalance between DNOs and CHP system developers
 - ⑩ SIR size appropriate?
 - ⑩ SIR eliminate uncertainty?

Interconnections



⇒ SIR guidelines appear size appropriate thus far, but will this trend hold?



Interconnections



⇒ Learning by Doing

- Does project facilitate interconnections?
- No data available on when first submitted vs. approved

NYSERDA

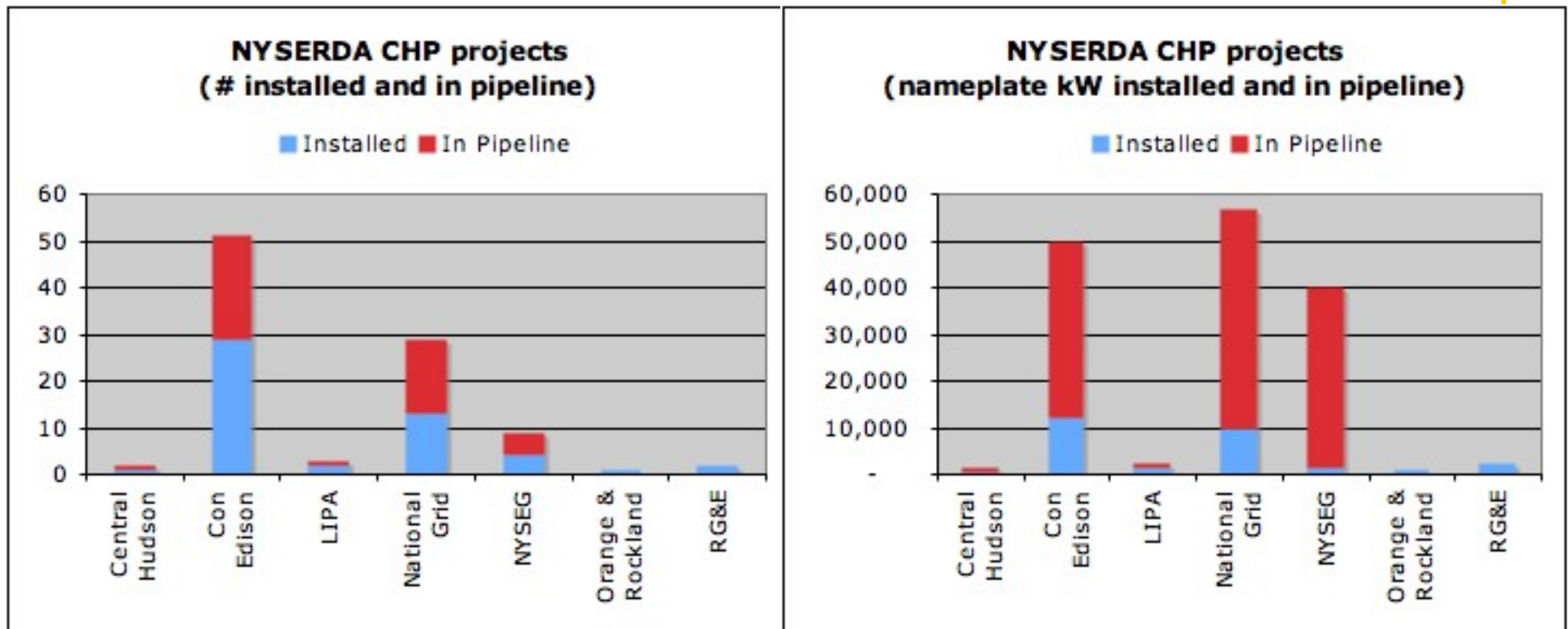


Interconnections



⇒ Learning by Doing

- Does project facilitate interconnections?
- No data available on when first submitted vs. approved
- Con Edison and National Grid far ahead the pack in terms of project experience



Interconnections



- ⇒ No technology consensus of what is necessary to facilitate interconnections
- A function of site specific circumstances
 - ⑩ Condensing turbine generator (dual relays necessary?)
 - ⑩ Microturbines (different standards for different applications and location)
 - ⑩ Synchronous generations (CLiP device, etc.)
 - Is the concern export to the grid, or fault current?
 - ⑩ Belts & suspenders
 - ⑩ Technology to the rescue?
 - How does this mesh with growing interest to export power?



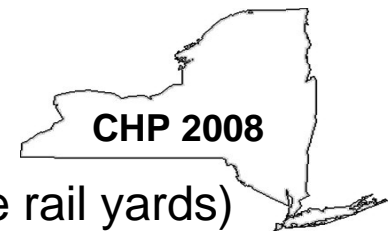
Islanding



- ⇒ Varied goals, varied approaches
 - Island within a large load (NY Times building in Manhattan)
 - Islanding the entire load (Hudson Valley Community College in Troy)
 - Islanding their...oh, never mind (Allied Frozen Storage in Brockport)
- ⇒ Islanding a cause for concern?
 - Extent of backup generator use
 - Loss of rate base
 - ⓐ Not a problem now, but could it become one?



Microgrids



- ⇒ Growing in popularity globally (London, CT, Chicago, west-side rail yards)
- ⇒ Various flavors
 - Campus: All power and thermal energy shared within a boundary (single owner/user)
 - District energy: Thermal energy exported, power used on site (single or multiple users)
 - Private wires: Power exported, thermal energy used on site (single or multiple owners/users)
 - Export only: power + thermal exported (multiple users)
- ⇒ NYU case study
 - New 15 MW upgrading old system (originally built 1980)
 - Ⓢ Hot water to 40 buildings, power to 25 buildings
 - Ⓢ “Revocable consent” to provide service across city streets
- ⇒ St. Lukes Hospital/Utica College case study
 - Burrstone Energy Center LLC
 - All thermal to hospital, power shared by hospital, Utica College and nursing home
 - 2007 PSC ruling allows electricity to be exported to adjacent users

NYSERDA Ⓢ PSC 07-E-0802



Carbon issues



⇒ Carbon markets

- CHP viewed favorably by international CDM markets, but US CHP projects have yet to gain traction among carbon markets
- RGGI
 - ⑩ Does not allow CHP as an offset project
 - ⑩ Emission allowance auction revenues to NYSERDA, unclear whether CHP funding will increase as a result
- Can CHP find a home among US voluntary carbon markets?
 - ⑩ Needs a methodology acceptable to US carbon finance community
 - ⑩ NYSERDA or Northeast CHP center convene a working group?
- Aggregation of smaller projects to enhance marketability of emission reduction credits?

⇒ Carbon sequestration

- DG problematic from a carbon capture and storage perspective?



Questions for you...



- ⇒ Overcoming interconnection barriers -- will the solution primarily be technical, regulatory/political, or “learning by doing”?
- ⇒ Islanding -- A boutique strategy, or an issue we need to pay attention to?
- ⇒ Carbon markets -- Good or bad news for CHP?
- ⇒ Carbon capture and storage -- Bad news for CHP? Or an overblown concern.