



**NYSERDA**



# Integrating CHP in New York State, USA

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Nice • France



GDF SUEZ



IR3D



**Before 2000: Existing CHP**

**5,000 MW**

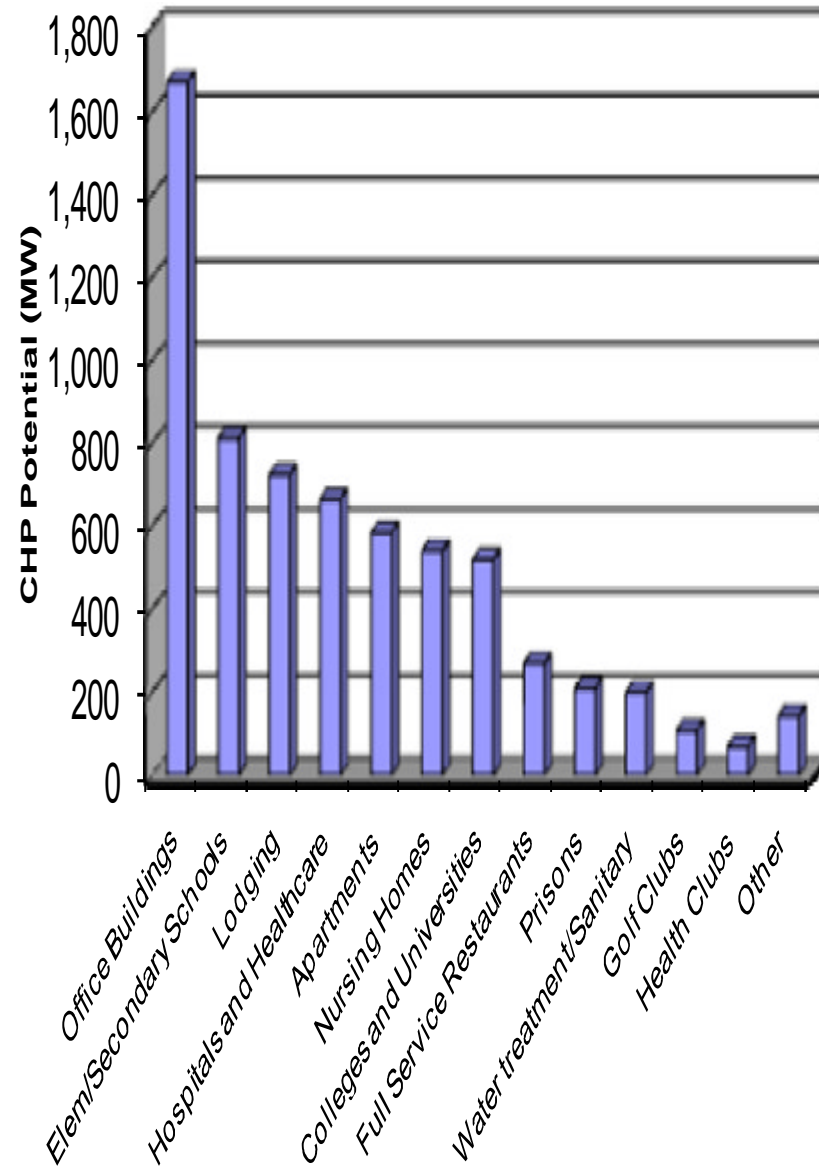
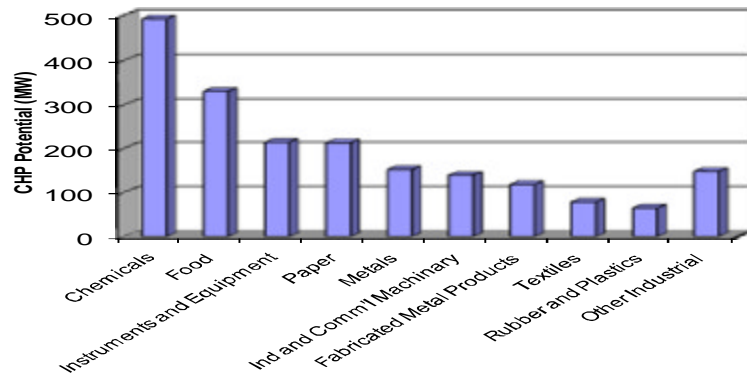
**at 210 sites**

**Average Size = 23 MW**

**Example: CHP at Papermill**



# Market Potential for New CHP Typical Size 1 – 5 MW



# Government Programs for Technology

## Development

- Invent new products.
- Incubate ideas in laboratory.
- Grow manufacturing jobs locally.
- Risk-share with technologist.
- Pay for best-efforts.
- **Scientific & Engineering Challenges.**

## Demonstration

- Experiment with state-of-the-art technology in “real world” settings.
- Isolate variables, progress from simple to complex scenarios.
- Risk-share with pioneer.
- Pay for best-efforts.
- **Familiarity / Trust.**

## Deployment

- Adoption of proven technologies.
- Increase customer demand “Market Pull”.
- Achieve measurable benefits.
- Avoid risk.
- Pay for performance.
- **Price / Availability.**

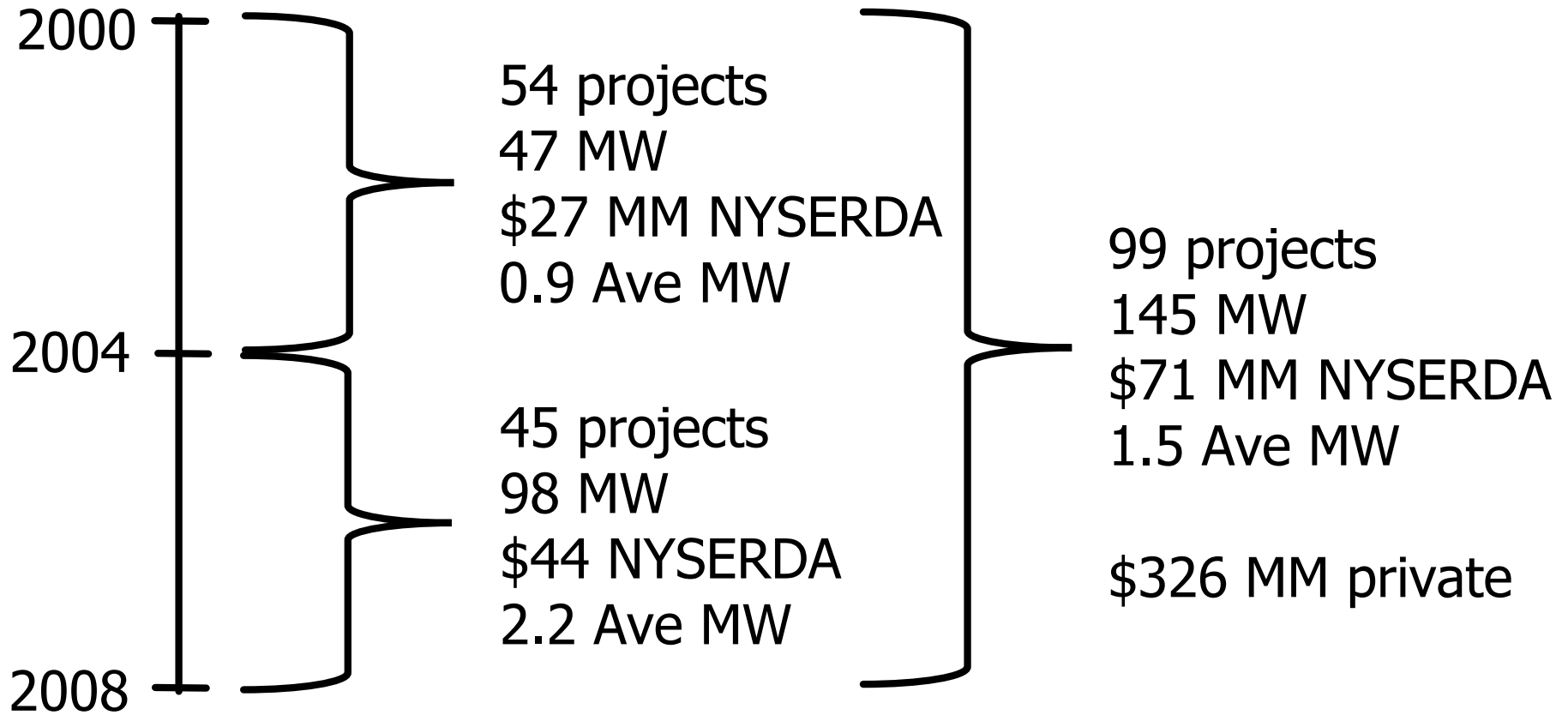
# The Second Mouse Gets the Cheese



**You first, I insist.  
you!**

**No, after**

# Government Funding for CHP



# Variety

## Generator

56 Engines.  
22 Microturbines.  
11 Fuel Cells.  
5 Steam Turbines.  
4 Combustion Gas Turbines.  
1 Organic Rankine.

## Customer

27 Industry.  
17 Multifamily Residential Building.  
14 Hospital/Elder Care.  
13 Schools.  
12 Commercial Office Building.  
10 Other.  
6 Dairy Farms.

## Other

- Size Range:  
5 kW to 30 MW.
- Most use Natural Gas, some Biofuel / ADG.
- All Grid-Connected.
- Heat Recovery:  
Heating.  
Absorption Chilling.
- >60% Efficiency.

# Challenges

- Interconnection.
- Location / Rigging.
- Multiple Utility Service Entrances.
- Each CHP has been Custom Design.
- Convince 1 Decisionmaker ——— 1 Sale.

# Raising the Bar for Demos

- Each year seek “new/innovative” projects to demonstrate features which “fill-in the gaps in our portfolio”.
- Current focus is the interconnection challenge:
  - CHP system (the “everyday” prime mover) must be capable of grid independent operation during grid outages.
  - Lessons from 2003 Blackout and Hurricane Katrina indicate traditional diesel emergency generators are unreliable / false sense of security.
  - Facility of Refuge / Safe Haven.



# Fleets

- Standardized, pre-engineered, pre-packaged CHP systems.
- Relationship between a CHP system developer and a company that controls multiple facilities with similar loads (fleet of supermarkets, fleet of hotels, etc.).
- Learning pathway to discover ideal CHP system for replication at many sites controlled by one decisionmaker:
  - Phase 1 – design prototype unit (generation 1), install one and test.
  - Phase 2 – design improved unit (generation 2), install several and test.

# Technology Transfer

- Professional Staff consultation.
- Performance Data at <http://chp.nyserda.org>
- Project Reports and Studies.
- Openhouse Showcase Events.
- Annual Conference with partners:
  - USDOE.
  - USEPA.
  - USCHPA.
  - WADE.



# Thank You

