NYSERDA

Public-Benefit Corporation - Established by the New York State Legislature

NYSERDA’s focus: Energy and it’s Environmental, Economic and Educational impacts on the state

Majority of Funding through System Benefits Charge
NY Electric Market

NYISO:
- 11,000 miles of circuits
- 300 Generators
- 34,800 MW peak
- 158,000,000 MWH

NY Utilities:
- 6 - IOU
- 2 - Public
- Municipals / Coops

Generation:
- Nuclear (27%)
- Natural Gas (26%)
- Hydro (18%)
- Imported (16%)
- Coal (8%)
- Other (5%)
Project History

2001: Prototype Development
2003: Pilot Scale Demonstration
2006: Gen 4 System Demonstration
2011: Gen 5 Commercial Demonstration
Site Characteristics

- East River: Tidal strait
- Tidal Flows: 2.0 - 2.5 m/s
Technology Overview
Turbine Deployment

- Rotor and Hub needed redesign
- Operation performance improved
Environmental Monitoring

Permitting Process: Involved numerous agencies
Confirmed Areas:

- Basic turbine performance
- Control system performance
- Grid interconnection
- Most operational procedures
- Specific technical components
  - Water-wetted yaw bearings
- Turbine array spacing and siting
- Environmental studies
  - Fish density and possible effects
Lessons Learned

Improvement Areas:

• Operational experience and methodologies
• Specific technical components
  – Equipment sealing
• Rotor (blades and hubs) design and testing requirements
• Resource measurement and analysis relative to structural requirements
Project Results

- Delivered over 80 MWh
- Efficiencies over 40%
- Operated over 9,000 hours
- Fully automatic, bi-directional operations
- Dynamometry testing completed
- No negative environmental impacts
Future

• FERC License Approval

• Gen 5 Commercial Operations Demonstration
  – Up to 30 units

• System Cost Reductions
  – Number of parts
  – Maintenance requirements

• Additional Operational and Environmental Monitoring