Agenda #15

RTS Update

Business Issues Committee

07/24/2002

Today's Discussion

- ➢ **Review choices confronting NYISO markets**
- ➢ **Present our recommendation**
- ➢ **Understand impacts of RTS**
- ➢ **Discuss costs and benefits**

Choices for the NYISO

➤ **Delay any infrastructure or design improvements until after NERTO formation**

➤ **Pre-Start NERTO implementation with NE**

➤ **Proceed now with SMD2-RTS Implementation**

    ▪ *Including EMS, SCADA and Simulator*

Impacts of Choices

Options	Costs	Schedule	Benefits	Liabilities
A. Delay till NERTO	$3-5M 10K hours		▪Lowest costs	▪No market improvements ▪All costs throwaway
B. Pre-Start NERTO	$40-50M	36-48mo	▪Incorporate NE market vision	▪Delayed start ▪Legacy improvements required because of delay
C. RTS w/ Infrastructure	$30M	18mo	▪Fastest market improvements and SEAMS fixes	▪Potential to not match NERTO vendor ▪Exposure to changing requirements

Our Recommendation

➢ **Proceed now with RTS implementation**

➢ **Believe the costs and liabilities are outweighed given:**

- ▪ *The substantial benefits*
- ▪ *Implementation schedule of options*
- ▪ *The avoided costs and risks*

Why Now ?

➢ **Why proceed given the uncertainties surrounding NERTO initiatives and soon to be released FERC NOPR?**

- *Address current issues*

- *Quickest realization of market benefits*

- *Advances market design toward NERTO and FERC SMD*

- *Immediate action required to avoid substantial legacy software re-architecture*

Benefits to NY of SMD and RTS

- **Market Improvements**
  - *Market Features*
  - *Solution Quality*
  - *Market Efficiencies*
- **Issues Addressed**
- **Market Leadership**
- **SEAMS**

Benefits to NY of SMD and RTS

➤ **Market Features Incorporated**

- ■ *Robust Ancillary Service Markets*
  - ▶ Implement full two-settlement system for ancillary service markets.
  - ▶ Reflect shortage costs into reserve and energy prices.

- ■ *Increased Control Area Interchange*
  - ▶ Enhanced transaction capacity through ¼ hr scheduling.

- ■ *Greater Security and Flexibility*
  - ▶ Improved real-time security assessment and market operation flexibility through ¼ hr evaluation and commitment decisions.

- ■ *Increased Capabilities for Demand Response*
  - ▶ Facilitate demand response price sensitivity into the real-time markets.
  - ▶ Eliminate current modeling limitations.

Benefits to NY of SMD and RTS

➢ **Solution Quality**

- *Provide affordable failover/redundancy consistent with industry best practices*

- *Enables improvement in billing, metering, auditability, customer satisfaction*

- *Facilitates anchor projects & new customers via better testing, operator and market participant training & data engineering*

- *Delivers software modification and enhancement flexibility*

Benefits to NY of SMD and RTS

➢ **Market Efficiencies**

- ■ *Ancillary Service market pricing and settlement*

- ■ *Improved in-day scheduling and dispatch*
  - ▸ Better GT management
  - ▸ Forward looking solution and market information

- ■ *Develop long-term incentives for generation expansion and load response, particularly for peaking capacity*

Benefits to NY of SMD and RTS

➢ **Issues Addressed**

▪ *Eliminate known limitations and inefficiencies existing in Real-Time Market and its environment*

▸ SCD not consistent with SCUC or FERC SMD White Paper

▸ Need to replace SCD was recognized prior to NYISO formation

▪ *Further improvement to price convergence between real-time scheduling and dispatch*

▪ *Address current limitations to incorporate new generation, monitor and secure additional transmission lines or interfaces and support additional analog metering*

Benefits to NY of SMD and RTS

- ➢ **Market Leadership**
  - ▪ *Build upon NYISO overall market design and strength of Day-Ahead Market (DAM)*
    - ▶ RTS completes implementation of market functionality into the Real-Time Market (RTM)
  - ▪ *Compliance with FERC initiatives to standardize market rules*
  - ▪ *Positions the NYISO markets for transitioning to a regional market*
  - ▪ *Establish NYISO markets in an SMD leadership role*

Benefits to NY of SMD and RTS

➢ **SEAMS**

- ▪ *Addressed*
  - ▸ Enhanced Inter-Control Area Transaction Management
    - – Extended protocols for common regional market interface
    - – Increased transaction volume
- ▪ *No new SEAMS created*
  - ▸ Shortage condition pricing may result in a separation of prices from non-SMD compliant systems during capacity constrained time periods

Project Assessment

- **Cost / Benefit Appraisal**
  - *Uplift Analysis*
  - *Wholesale power cost*
- **Avoided costs and risks**

Project Assessment - Costs

➢ **Project costs include the implementation of:**

 ▪ *RTS*

 ▪ *SCADA / EMS*

 ▪ *State Estimator*

 ▪ *Simulator, training and testing environment*

➢ **Costs include software, hardware and supporting resources.**

➢ **Estimated annual costs:**

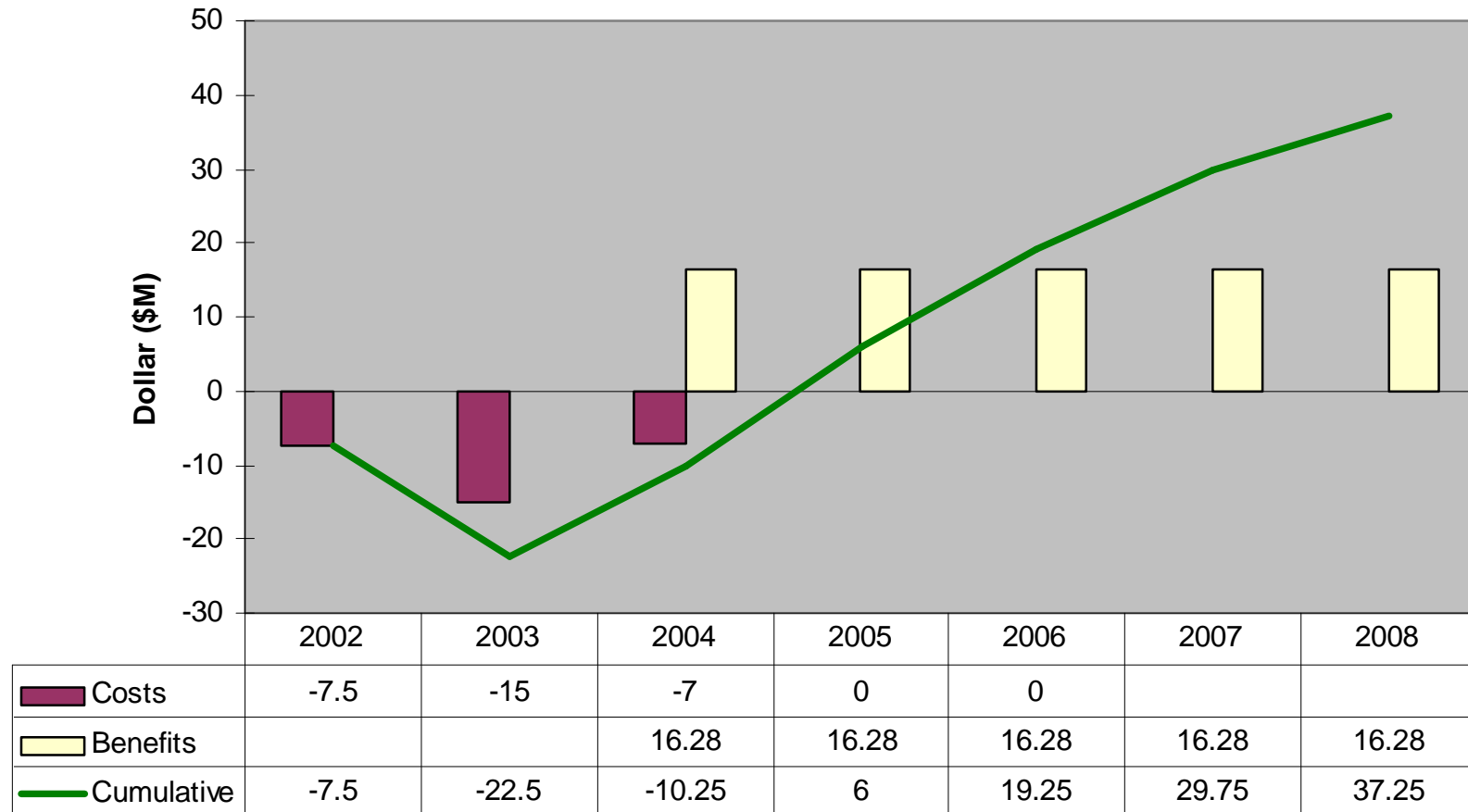| Year	2002	2003	2004
Costs ($M)	7.5	15	7

Project Assessment – Uplift Analysis

➢ **Uplift Impact**

- *Uplift reductions resulting from:*
  - ▸ Price consistency between real-time scheduling and dispatch
  - ▸ Ancillary service scheduling
  - ▸ Reduced out-of-merit requests
- *Categories of uplift impacted include:*
  - ▸ 81203/81208 Balancing NYISO BPCG – Internal Units
  - ▸ 81204/81209 Balancing NYISO BPCG – External Units
  - ▸ 81315/81317 DAM Contract Balancing
- *Annual reduction in uplift of $16+M*

Project Assessment – Uplift Analysis

Costs Recovery of RTS-EMS-SCADA Implementation
-- Uplift Savings Payback --

	2002	2003	2004	2005	2006	2007	2008
Costs	-7.5	-15	-7	0	0		
Benefits			16.28	16.28	16.28	16.28	16.28
Cumulative	-7.5	-22.5	-10.25	6	19.25	29.75	37.25

Project Assessment – Power Costs

➢ **Expected cost savings**

- *Achieve a conservative 25% of the cost benefits to NY as determined in the NERTO Economic Assessment due to:*

    ▶ Enhanced transaction capacity

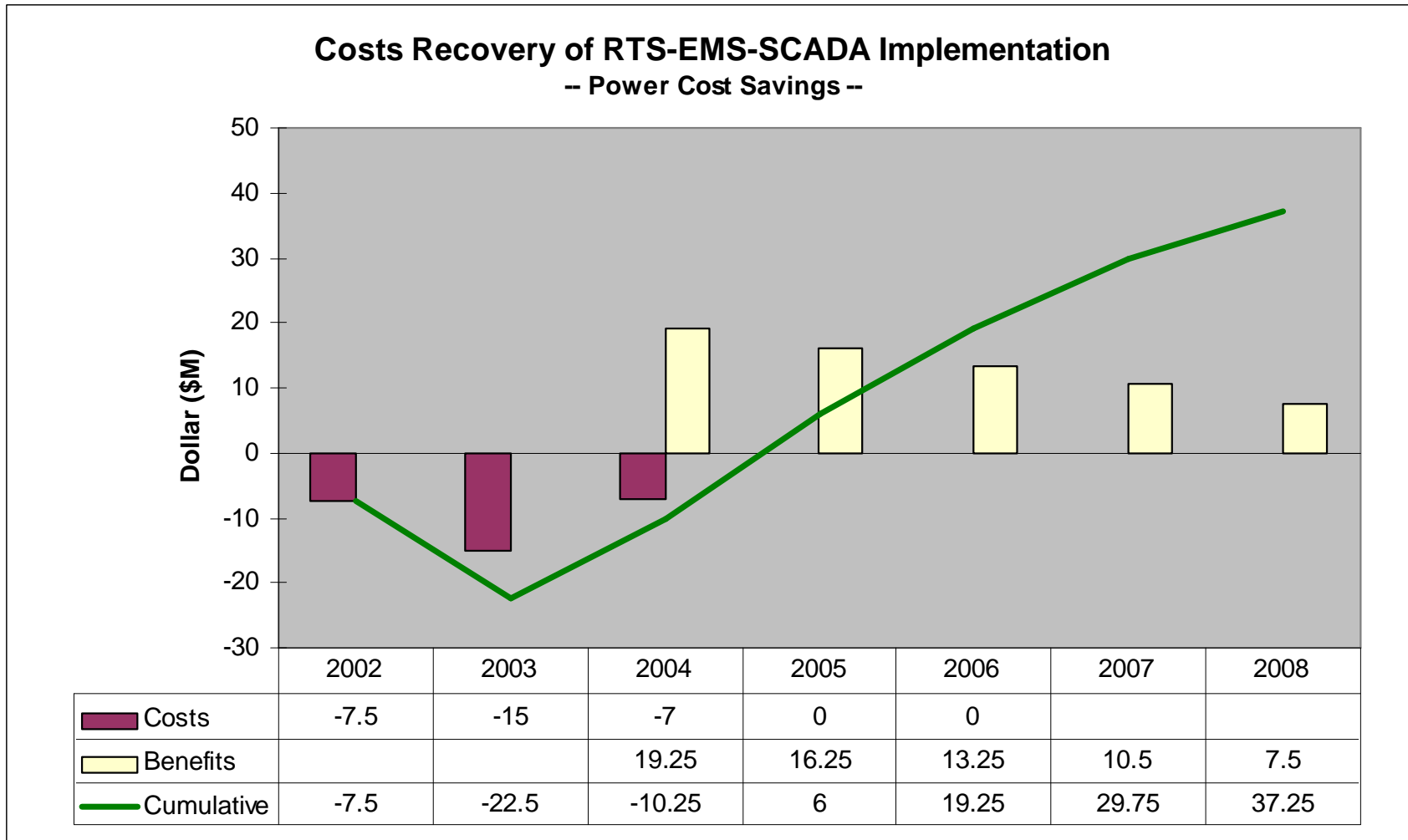   ▶ Reserve scheduling and pricing

Project Assessment – Power Costs

➢ **"Economic and Reliability Assessment of a Northeast NERTO" calculated annual savings in wholesale power costs to NY of:**

	2005 ($M)	2010 ($M)
Seams Elimination/ Market Standardization	77	18
Eliminate Export Fees	166	94
Single Dispatch	34	17

➢ **Presumed a linear reduction in benefits from 2005 to 2010, and benefits would be achieved beginning with the first year of RTS operation (2004)**

➢ **RTS produces a conservative 25% of "Seams Elimination/Market Standardization" benefits**

	2004	2005	2006	2007	2008
Benefits ($M)	19.25	16.25	13.25	10.5	7.5

Project Assessment – Power Costs

Costs Recovery of RTS-EMS-SCADA Implementation
-- Power Cost Savings --

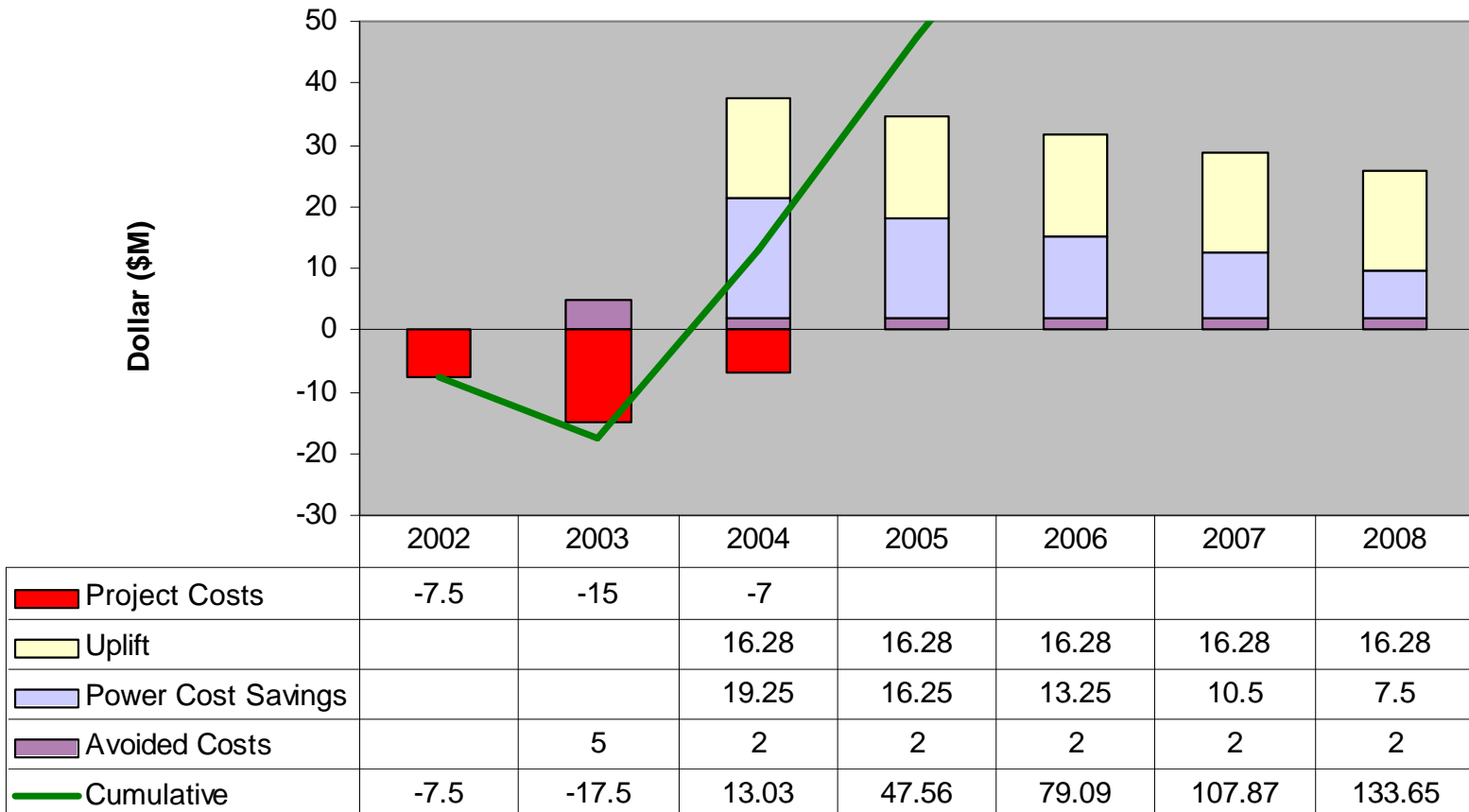|	2002	2003	2004	2005	2006	2007	2008
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Cumulative	-7.5	-22.5	-10.25	6	19.25	29.75	37.25

Project Assessment – Costs Avoided

- **Infrastructure Expansions**
  - *10,000 task hours and $3M-$5M necessary to enhance mainframe environment and software systems to support on-going expansions in generation facilities and monitoring requirements*

- **On-going software development efforts of $2M/yr on legacy platform**

- **Limited resources available to support existing infrastructure**

- **Extended development timelines**

Project Assessment – Risks Avoided

➢ **Address software failure potentials**

- *Market Failure:*
    - ▸ Typical Day: $575K Market commerce/hour
    - ▸ Peak Conditions: $12M Market commerce/hour

- *System Reliability Failure:*
    - ▸ Black out costs: $1000 - $5000/MW-hr

➢ **Relieve NYISO infrastructure barrier to new market participation**

Project Assessment – Combined Benefits

Costs Recovery of RTS-EMS-SCADA Implementation
-- Combined Benefits --

	2002	2003	2004	2005	2006	2007	2008
Project Costs	-7.5	-15	-7				
Uplift			16.28	16.28	16.28	16.28	16.28
Power Cost Savings			19.25	16.25	13.25	10.5	7.5
Avoided Costs		5	2	2	2	2	2
Cumulative	-7.5	-17.5	13.03	47.56	79.09	107.87	133.65

Project Summary

- **RTS results in fast positive returns and more efficient / effective markets**

- **Mitigate risks (and costs) by shortening exposure to existing deficiencies and problems**

- **Action required regardless of market impacts or RTO:**
  - *Modeling and scheduling limitations*
  - *System supportability*
  - *Establish a technologically advanced marketplace*

- **SCUC and RTS achieves compliances with SMD**