

Evaluating Energy Efficiency Benefits for Energy Providers and Customers

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Topics

- **Why a closer look at energy efficiency's multiple benefits for energy providers is timely**
- **Evaluating multiple benefits for energy providers and their customers**
- **Multiple benefits evaluation research needs**

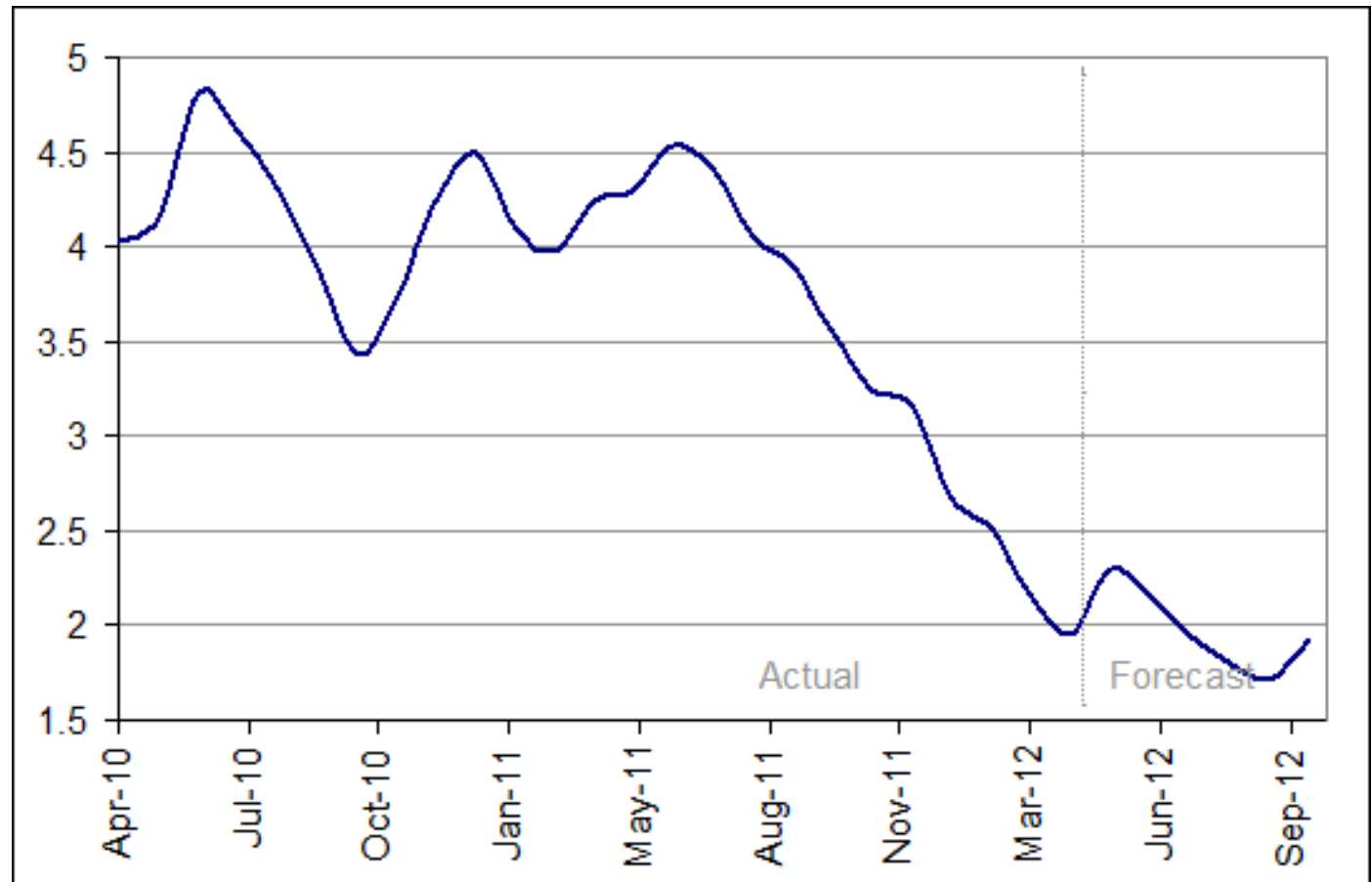
Energy efficiency delivered by energy providers trending upwards

- North America
 - Rapid growth in energy provider EE spending
 - \$6 billion in 2010 —————> \$15 billion by 2015
 - Great diversity of regulatory mechanisms
- Europe
 - Obligations already in place in several EU member states
 - \$3 billion annual investment (0.5% of sales)
 - Proposal for EU-wide obligations on energy providers
- Asia-Pacific
 - China's new DSM Rule
 - DSM efforts by India's investor-owned utilities
 - Australia's WhC schemes and proposed NESI



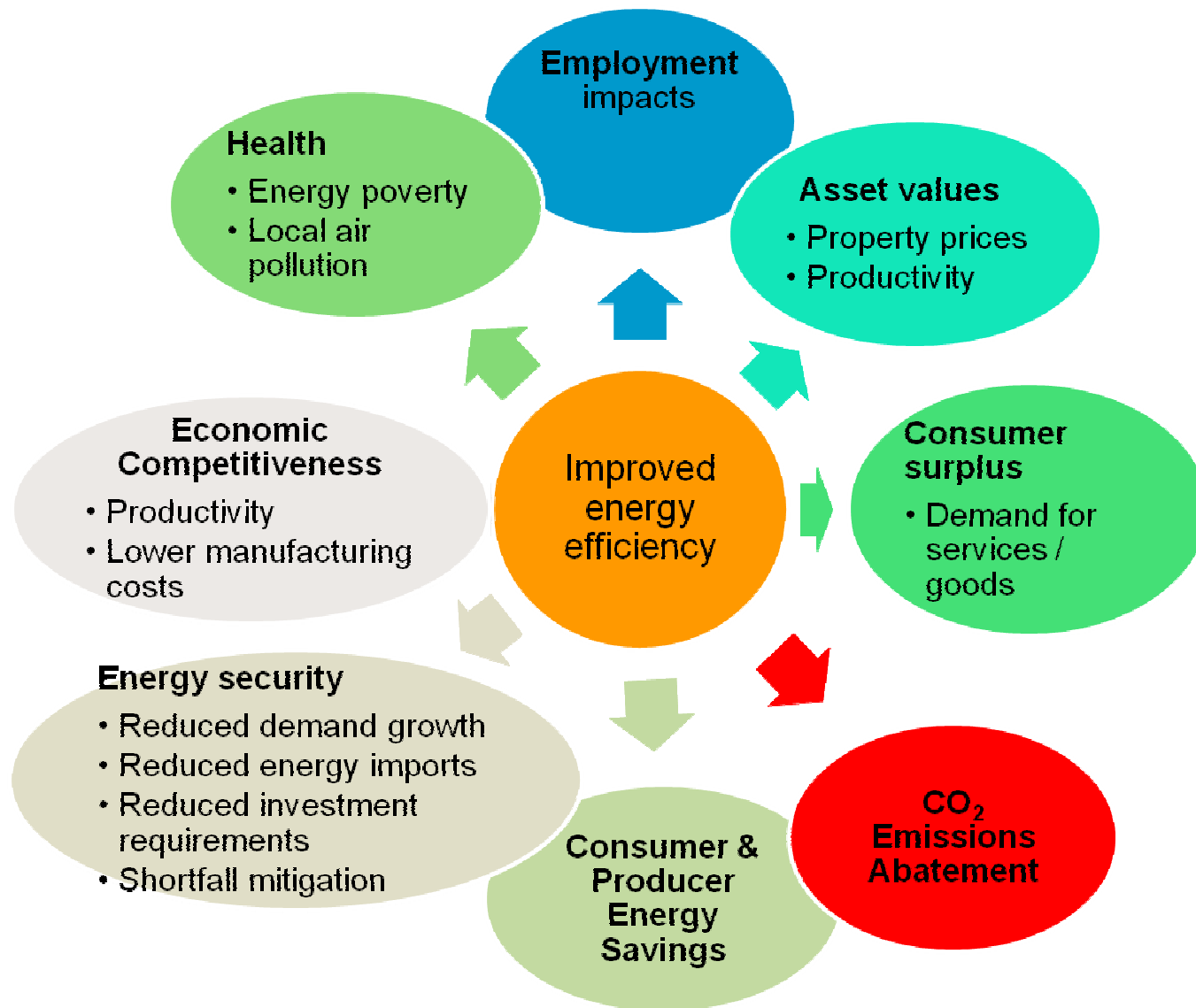
Value stream from energy savings trending downwards... in the US now and possibly in the world

\$/MM
BTU



Source: The Financial Forecast Center

Can the financial and social benefits of energy efficiency fill the gap?





Multiple benefits of energy efficiency for energy providers and their customers

1. More affordable energy bills
2. System and network deferrals
3. Market prices
4. Resource portfolio cost and risk

1. More-affordable energy bills

■ Operating costs savings

- Carrying costs on billing arrears
- Overdue bill reminders and collection agencies
- Fewer bad debt write-offs
- Disconnection and reconnection costs
- Lower lost-making sales on subsidized tariffs

■ Other benefits

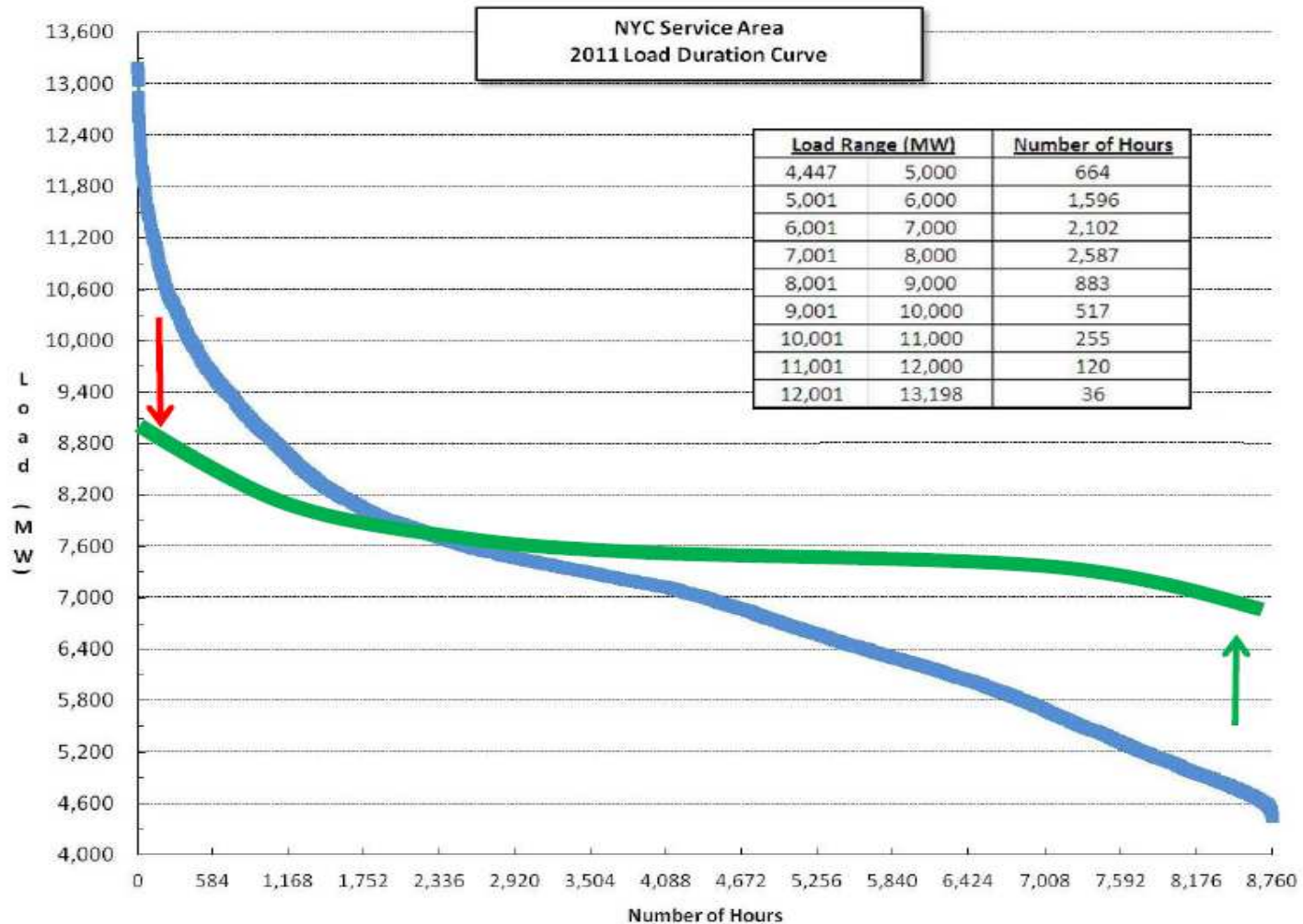
- Reduced risk from disconnecting vulnerable customers
- Avoidance of image problems



2. System and network deferrals

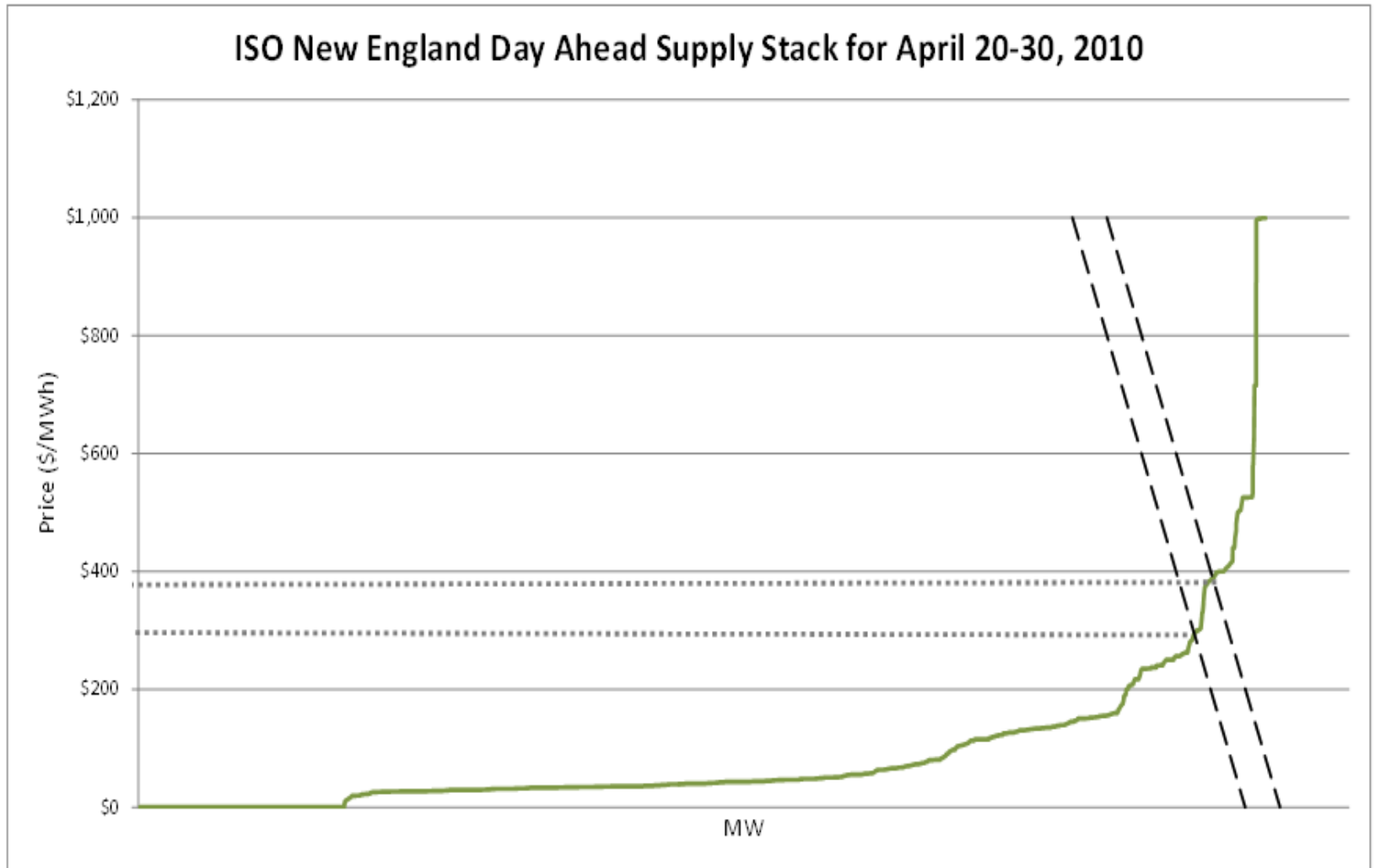
- Valuation principle for deferrals: Time = money
- Two decades of experience
- “Active” and “passive” deferral
- Challenge of unbundling to realizing deferral benefits

Targeting demand-side resources in time and space



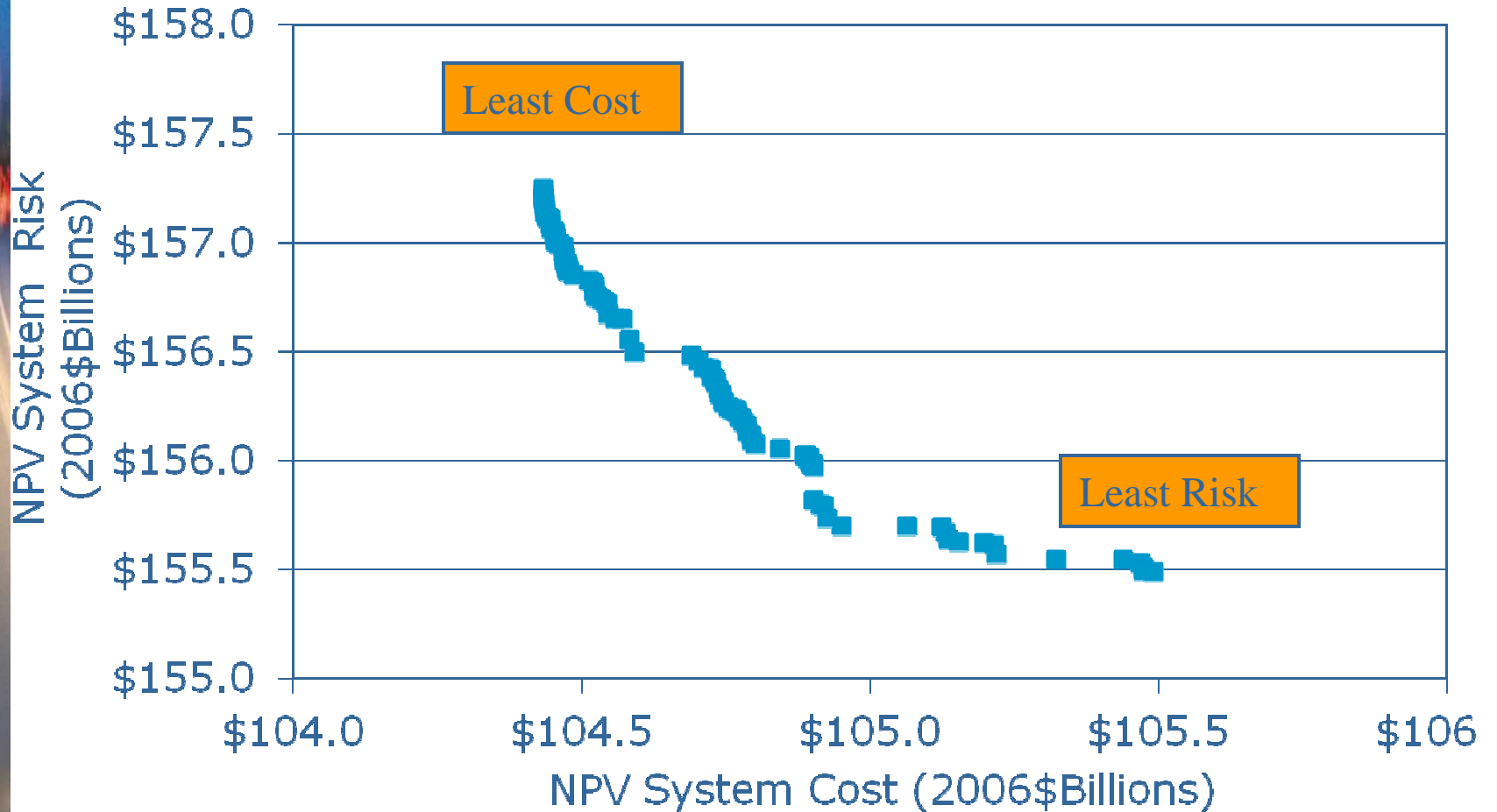
Source: Croft/Con Edison, 2012

3. Market prices



Source: Hurley/Synapse Economics, 2012

4. Resource portfolio cost and risk



Source: Eckman/Pacific NW Planning Council 2012

Multiple benefits evaluation approaches

Source of Benefits	Evaluation Approach	Estimation Methodology	Reference
1. More affordable energy bills	Operating cost savings	Direct analysis of utility operating budgets	Mass DPU Howatt & Oppenheim Skumatz and Dickerson Skumatz
2. System and network deferrals	Network Planning Approaches	Direct analysis of revenue impacts; estimated hedge value of improved decisions	Gazze and Mazarlian Craft RAP
3. Market prices	Market clearing price differentials	Market simulations	Brattle Group; Synapse Economics
4. Resource portfolio cost and risk	Analysis of alternative long-term resource plans	Net present value (NPV) of utility levelized annual revenue requirements (LARR)	NW Power Planning Council

Magnitude of multiple benefits of energy efficiency for energy providers

Multiple Benefit Category	Potential magnitude relative to energy benefits	Source
1. More affordable energy bills	10%	Howatt & Oppenheim Skumatz and Dickerson
2. System and network deferrals	25%	Craft
3. Market prices	33-50%	Hurley
4. Resource portfolio cost and risk	N/A	NW Power Planning Council



Multiple benefits evaluation research needs

- **Update cost-effectiveness practices to accommodate multiple benefits.**
- **Market price benefit estimation needs to be standardized**
- **Risk mitigation benefits of demand-side resources resource need closer examination**
- **Understanding the weather sensitivity of energy efficiency programmes.**

Politics of multiple benefits

- **Why do some stakeholders oppose introducing non-energy benefits into cost-effectiveness evaluations?**
- **What can (or should) the evaluation community do to broaden the scope of cost-effectiveness evaluation protocols (e.g., the California SPM)?**