

Making DSM Real

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What is NAESCO?

- National trade association
- 130 members
- ESCOs, engineers, finance companies, suppliers and manufacturers
- International controls companies, major utilities and utility subsidiaries, independent national and regional companies



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Donald Gilligan

- 25 years in energy efficiency
- Founded two ESCOs
- Consulting to trade associations, utilities, federal and state agencies
- Helped assemble largest commercial aggregation in New England
- Designed and implemented 75-point network to monitor ~500 MW



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Making DSM Real

- Different approach
- Address underlying problem
- Solve technical problems
- Massive marketing effort



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Different Approach

- Current focus on symptom
 - Real-time pricing issues
- Cold water bath for sick child
- Acme Automated Baby Dunker
- Crises indicate underlying problem
- Traders vs. operators
- Trader view not politically tenable



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Underlying Problem

- Low system capacity factor
 - Lower peak; boost off-peak
- Telecom/airline examples
- Infrastructure in poor shape to try
 - VW example in residential
 - EMS example in commercial
 - M&T example in industrial



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Customers Not Real Time

- Many will change load shapes
- Few will dance with the traders
- Response time is months to years
 - Retrofit project gestation ~ 12-18 months
- Problem of customer exhaustion
 - CA interruptibles near limit
 - Issue of thermal inertia



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How Much DSM Is Available?

- NJ CRA Proceeding
 - See NJ BPU Docket Nos. EX99050347 et. al.
- Major electric utilities report available, cost-effective savings potential
 - 31% of industrial
 - 27% of commercial
 - 32% of residential



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Public Policy Off Track

- Cut DSM funding in late 1990s
- Shifted from resource acquisition to market transformation
- No peak factor in building codes
- Regulatory hurdles for CHP
- Utilities dominate programs
- Misunderstanding of ESCOs



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Funding/Mkt Transformation

- 2000 funding a fraction of 1993
- Obsession with what DSM "should cost"
- Continuous planning
 - CA: 3 programs in 3 years
- Cited as a cause of the CA electricity crisis by Chairmen Lynch and Kahn
- Change of policy in NYS?



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Building Codes

- Performance standards based on annual energy use, not peak load



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Hurdles for CHP

- Can raise new plant efficiencies to the range of 75 to 90%
- NIMBY issues
- Nearby Harvard/MATEP plant
 - 10 years in permitting
 - 3 years to turn on engines



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Utilities Still Dominate

- Easiest alternative for regulators
- Conflict of interest exacerbated by stranded cost recovery
- Not sophisticated marketers
 - Little psychographic research on customers
 - Transforming markets or transforming customers?



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Misunderstanding ESCOs

- Business profile similar to construction
 - Profitability: relatively low gross margins
 - Not in position to push innovations
- Little marketing expertise or budgets
- Little R&D expertise or budgets



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What Can We Do?

- Solve technical problems
- Massive marketing/education programs
- Public funding



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Technical Problems

- Heat storage
 - Off-peak DHW
 - Electric storage space heating
- Ice or cold water storage
- Building operator EMS training
- M&T approach to upgrading in industrials and institutions



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Massive Marketing

- Assume goal is 25% shift
 - \$50 Billion in electricity purchases
- Assume 4-year payback
 - \$200 Billion in projects
- Assume 10-year program
 - \$20 Billion/year
- Marketing at 5-10%
 - \$1-2 Billion per year



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Public Funding

- No alternative source of funds
- ESCOs can't do it on cash flow
- ESCOs are small divisions of large companies -- less profitable
- No venture capital for ESCOs
- Only price elasticity tool available in short term to most customers?



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Avoided Cost of Power

- Regulated world: avoided cost = **cost** of last unit of generation
- Unregulated world: avoided cost = **price** of last unit of generation
x all units floating at clearing price
- Unregulated world: value of load reduction = 2.5 x average price, up to 11 times marginal price (W. Marcus, CA, 1998-99)



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Conclusion

- DSM is available
- Focus on building system capacity factor, not real-time pricing
- Need massive effort on solvable technology/marketing problems
- Need public funding for effort



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