



Innovative Vendor-Based Delivery Mechanisms for Retrocommissioning and Prescriptive DSM Programs

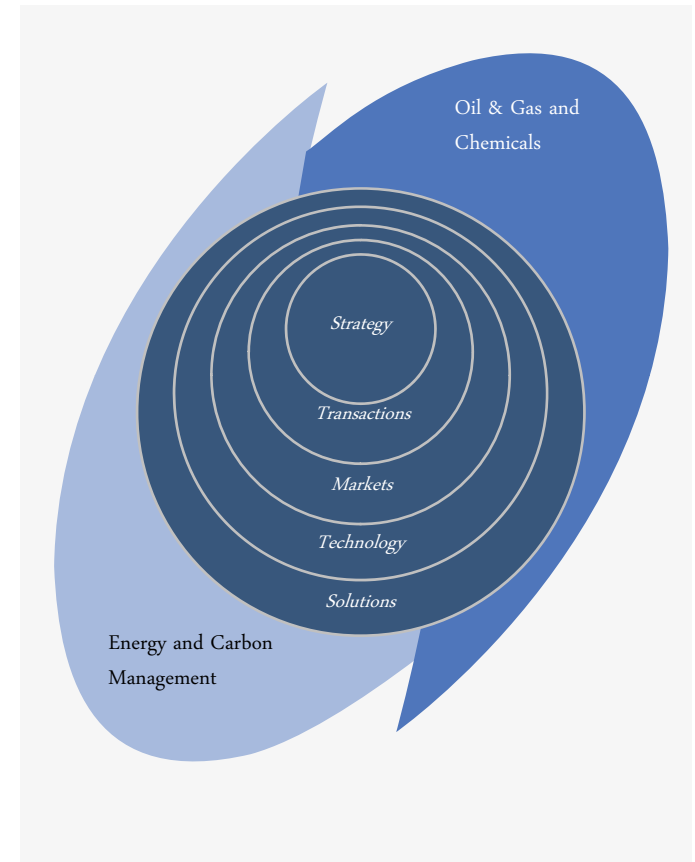
Energy Efficiency Market Transformation
Opportunities for Texas



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Nexant Overview

- Staff of 260+ employees
- Completed over 1,500 energy industry assignments in more than 70 countries with nineteen offices around the world, including Houston
- Nexant's Energy and Carbon Management business unit involved with utility energy-efficiency efforts in Texas since the 1990's
 - Market potential assessments
 - Template and program design activities
 - Turnkey program implementation support



Commercial DSM Programs

■ Ongoing objectives for Commercial DSM programs

- Identify new opportunities
- Increase participation
- Increase net savings
- Streamline administration



Commercial Building Lifecycle

■ Summary today of two successful vendor-based delivery models

- Retrocommissioning (O&M)
- Prescriptive (primary system replacement, limited new construction)



Retrocommissioning

“Realization of demand and energy savings through the systematic evaluation of building and industrial systems and the implementation of low-cost and no-cost measures targeted to improve system operation, reduce energy use and demand and, in many cases, improve occupant comfort.”

- PUCT approved program template available [16 TAC §25.184(c)(12)]
- Utility DSM program services typically include
 - Identification and quantification of available retrocommissioning savings opportunities at reduced or no cost to participant
 - Implementation incentives
 - M&V services
- Local Retrocommissioning Service Providers (RSP) trained through program serve as primary program delivery mechanism



Retrocommissioning – Impact on Texas Market

■ Savings

- Retrocommissioning programs in Texas and around the country realizing annual verified peak demand savings of 0.07% - 0.10% of total commercial demand
- Annual energy savings of 2,000 – 2,500 kWh/yr per peak kW saved

■ Costs

- Turnkey implementation costs range from \$425/kW to \$525/kW depending on size of service territory and scope of services provided
- Cost-effective in Texas and other parts of the country

■ Additional Information

- Persistence study is underway in Texas - results expected in December



Implemented Retrocommissioning Measures

- Ventilation controls
 - Optimum minimum outside air intake
 - Correct economizer operation
- Pumping
 - Controls and sequencing
 - Impeller trimming and change outs
 - Eliminate hot water re-circulation pumping
- Controls
 - Optimize chiller start/stop
 - Optimize VAV system
 - Reprogram sequence of operations
 - Reset chilled water supply temperature
 - Chiller lead/lag sequencing
- Compressed air systems
 - Leak reductions
 - Update and repair controls
 - Booster pump replacement
- Other equipment
 - Calibrate duct pressure sensors
 - Repair fan powered box units
 - Minimize reheat in DD/VFD system
 - Multizone AHU conversion to VAV
 - Dual-duct AHU conversion to VAV
 - Thermal energy storage optimization
 - Repair nitrogen leaks



Prescriptive Program

- Prescriptive program streamlines program participation with simplified application process and incentive amounts for common, market-proven technologies
- Primary delivery mechanism is a managed network of vendors, contractors, and installers (“Trade Allies”)
- Trade Ally delivery advantages
 - Natural market channel for replacement/retrofit projects
 - Win-win situation for trade professionals and the utility with move towards true market transformation while realizing savings benefits immediately
 - Allows for focused efforts on specific target technology and target markets
 - Immediate uptake in other program offerings through referrals

Prescriptive Program Approach to Market

Market Barriers	Education and Awareness	Technical Services and Support	Incentives	Manufacturer/ Vendor Outreach
Lack of information	✓	✓		✓
Lack of resources		✓		✓
Incomplete pricing information	■			
Performance uncertainties	✓	■	■	■
Incremental capital costs			✓	
Corporate policies	✓	■	■	
Split incentives	■		✓	
Existing market infrastructure		✓	✓	✓

✓ Primary method to address barrier

■ Secondary method to address barrier



Representative Prescriptive Measures

- Lighting
 - LEDs
 - Fluorescent
 - Controls
- HVAC
 - Unitary
 - Chillers
 - Controls
- Motors
 - Premium efficiency
 - VFDs
 - Electrically commutated
- Food service
 - Refrigerators/freezers
 - Ice machines
 - Dishwashers
- Building envelope
 - Windows
 - Insulation
 - Roofing
- Refrigeration
 - Anti-sweat controls
 - Air curtains
 - Gaskets and automatic closers

A horizontal banner at the top of the slide, divided into five panels. From left to right: a power transmission tower against a blue sky; a person in a white lab coat looking at a device; a modern office interior with glass walls; a close-up of a stack of gold coins; and two men in business attire looking at a tablet.

Commercial Prescriptive Market Potential

■ Savings

- Similar programs around country realizing annual peak demand savings of 0.08% - 0.12% of total commercial demand
- Annual energy savings of 3,500 – 4,000 kWh/yr per peak kW saved
- Ramp-up period ~2 years depending on underlying market infrastructure

■ Costs

- Turnkey implementation costs range from \$425/kW to \$700/kW depending on size of service territory and comprehensiveness of offering
- Estimated benefit/cost ratios 2.75+
- Incentives well within proposed modifications to payments levels



Prescriptive Delivery in the Texas Market

- Limited version could be offered under existing Standard Offer Program template [16 TAC §25.184(c)(3)]
- Pilot-program offering under R&D set-aside created in HB 3693
- Ideal option would be new template
 - Combine all commercial customers into one program
 - Allow direct customer participation for all interested parties
 - Define costs to grow and proactively support/maintain the Trade Ally network as “non-administrative” costs
 - Allow a post-purchase delivery model where appropriate



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