

Delivering Comprehensive Energy Efficiency on a Large Scale: Challenges and Lessons Learned

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The Regulatory Assistance Project

China ♦ India ♦ European Union ♦ Latin America ♦ United States



The Regulatory Assistance Project (RAP)

- Non-profit organization providing technical and policy assistance to government officials on energy and environmental issues
- Principals are all former regulators or energy officials with deep experience in energy efficiency and other clean energy alternatives
- Funded by several foundations, US DOE & EPA and international agencies.
- We have advised governments in over 18 nations and 40 US states
- European office in Brussels. Currently working closely with DECC on HES and related energy efficiency policies.



What's Needed for a Strong Buildings EE Program? -- North American Experience

- High level, enduring **policy commitment**
- **“Whole buildings”** approach
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Nature of the problem

Market barriers

Lack of information

Upfront costs

Payback periods - high implicit discount rate

Consumer inertia: Hassle factor, timing mismatches

Split incentives – eg,
Builder/buyer
Tenant/landlord

Unpriced external costs

Uncompensated benefits –eg, system reliability

Lessons:

- The barriers are the same in both traditional utility systems and in restructured, liberalized markets (US has both)
- Single-barrier attempts don't work (audits alone, financing alone, etc.)
- Cheap measures now, more later creates lost opportunities
- Utility-system charges, not taxes to leverage private capital

THE BIG PICTURE

**Policy Oversight
(Government)**

**Establishes Goals,
Budgets and Policy
Guidance (incl. whole-
house criteria)**

**Independent Verification
of Energy Savings**

**Motivated
& Capable:
Aligned
Incentives**

**Efficiency Portfolio
Manager (s)**

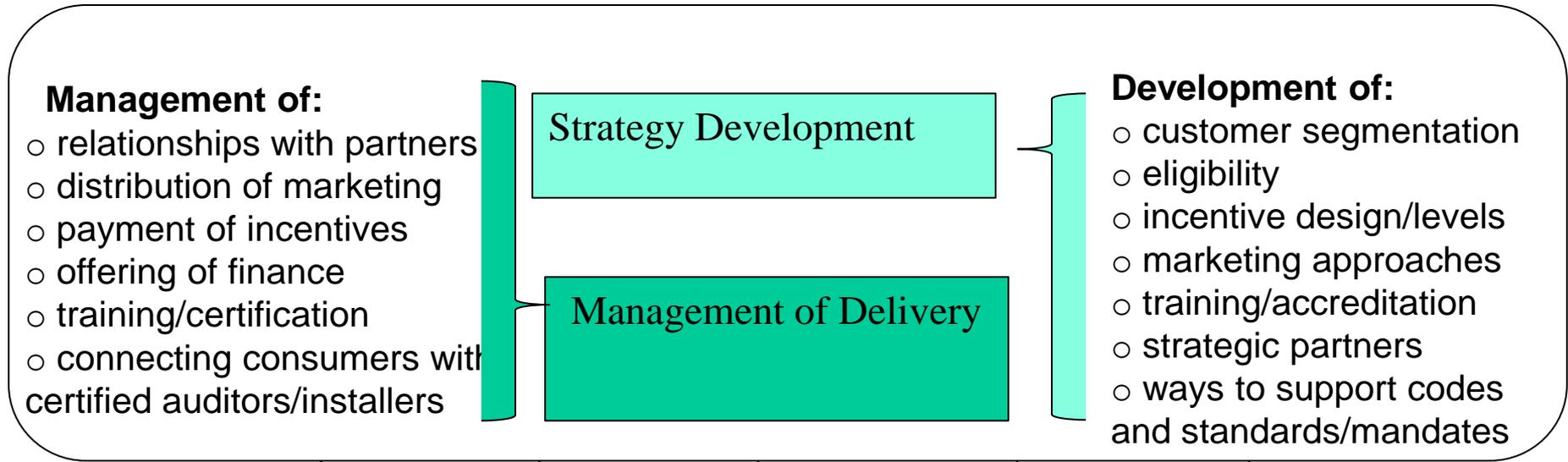
**Develops and Manages
Strategies to Achieve
Goals**

Accountable for Results

**Competitive, Private-
Sector Product and
Service Providers**

**Provides and Installs
Efficiency Measures**

The Efficiency Portfolio Manager is Accountable for Results



and coordinates relationships with many entities in the delivery chain...

Energy Auditors
and Installers

Manufacturers
and Retailers

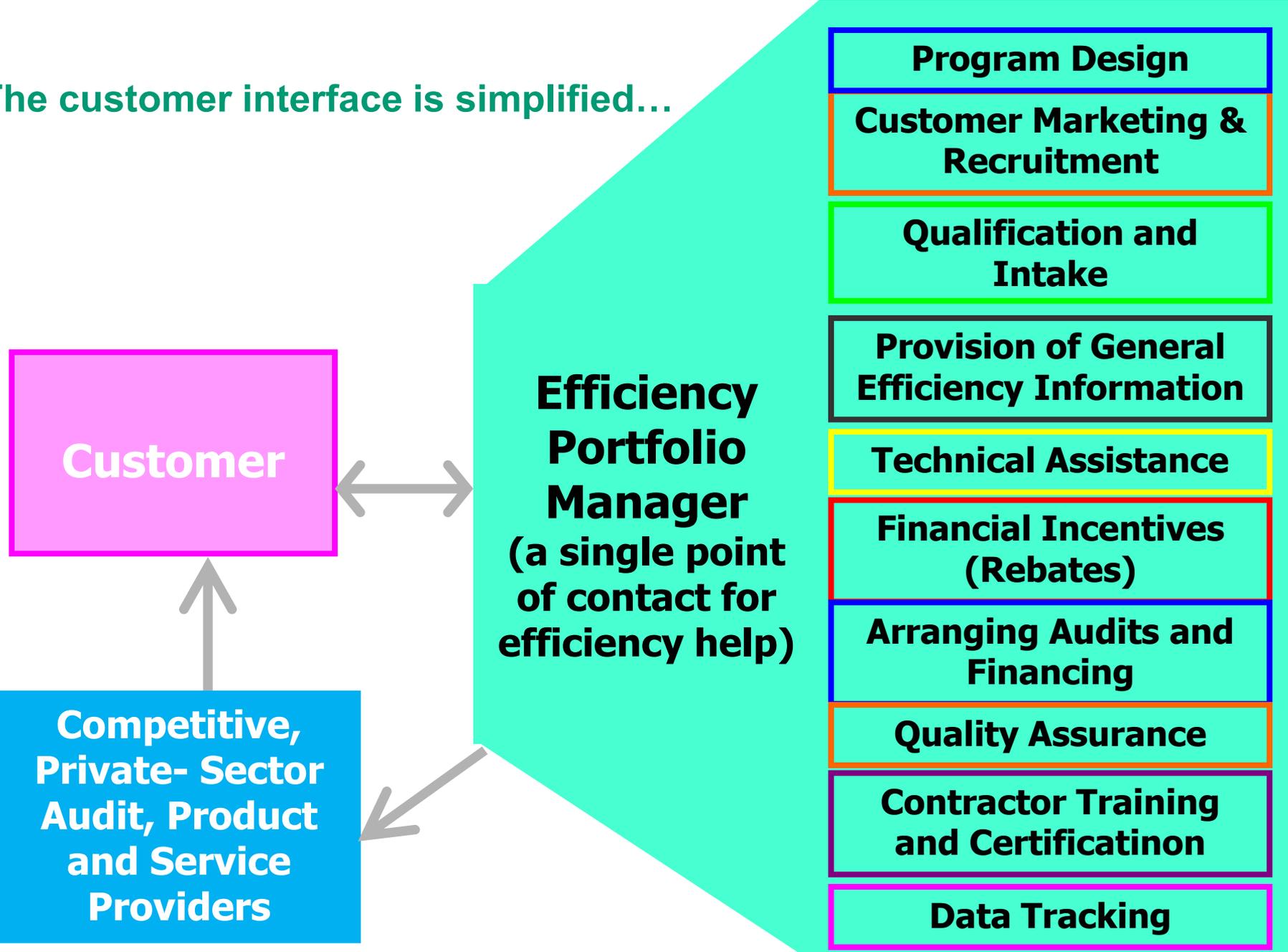
Lending
Institutions

Local Govts/
and Agencies

Post-Work
Inspectors

...but each consumer interfaces with a single point of contact for efficiency help

The customer interface is simplified...



Customer

**Competitive,
Private- Sector
Audit, Product
and Service
Providers**

**Efficiency
Portfolio
Manager**
(a single point
of contact for
efficiency help)

Program Design

**Customer Marketing &
Recruitment**

**Qualification and
Intake**

**Provision of General
Efficiency Information**

Technical Assistance

**Financial Incentives
(Rebates)**

**Arranging Audits and
Financing**

Quality Assurance

**Contractor Training
and Certificatinon**

Data Tracking

Who Should be the Portfolio Manager(s)?

Answer Depends on Specific Circumstances

| State | Efficiency Portfolio Manager Structure of Top 10 (ACEEE) |
|----------------------|---|
| California | Regulated Utility (DNO with supply function) |
| Massachusetts | Regulated Utility (DNO with supply function) |
| Connecticut | Regulated Utility (DNO with supply function) |
| Vermont | Contracted Private Entity (nonprofit) |
| Wisconsin | Contracted Private Entity (nonprofit) |
| New York | Government Agency |
| Oregon | New, Sole-Purpose Public Corporation |
| Minnesota | Regulated Utility (DNO with supply function) |
| New Jersey | Contracted Private Entity (for profit) |
| Washington | Regulated Utility (DNO with supply function) |

In All Cases: Alignment of Incentives Was Key!



- Entrepreneurial NGO founded in 1986
 - **170+ employees**
 - **~\$40 million annual budget**
- Mission: "Reduce the Economic and Environmental Costs of Energy"
- Best Known as Efficiency Portfolio Manager for "Efficiency Vermont"
 - **Vermont's Statewide "Energy Efficiency Utility"**
 - **Achieving Deepest Efficiency Savings in North America (incremental 2.5% of electric requirements in 2008)**
 - **Highest Level of Investment in US (over \$60 per capita)**



Consultants in

- **Market Analysis**
- **Program Design**
- **Cost-Effectiveness Screening**
- **Regulatory Policy**

Range of Clients

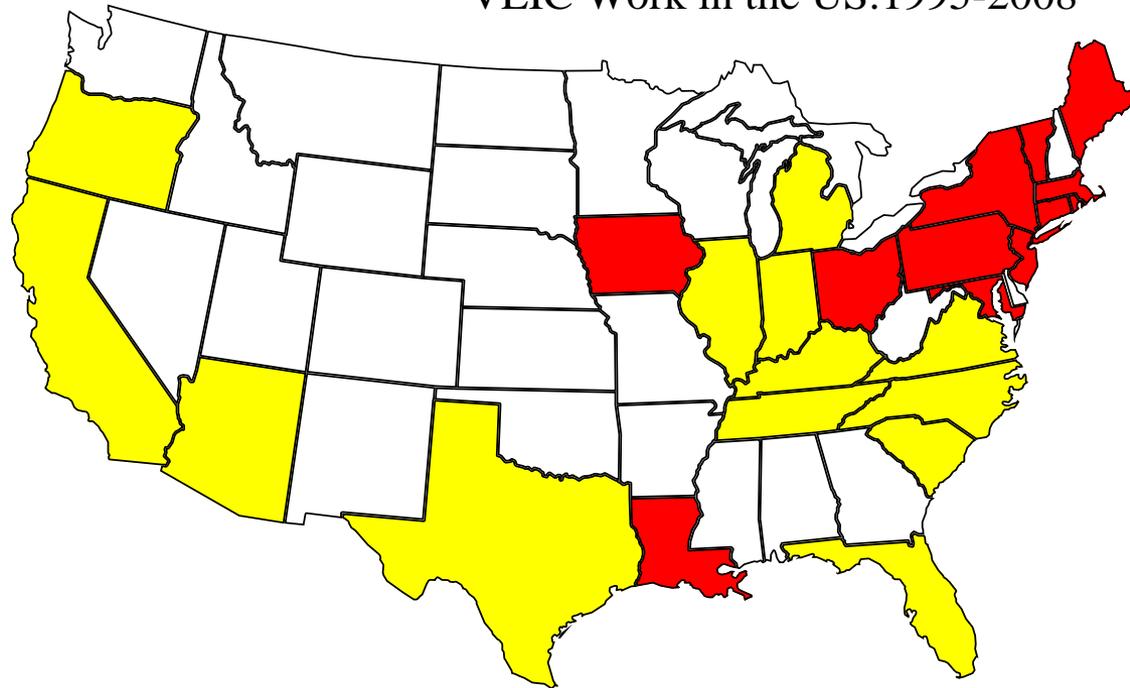
- **Regulators**
- **Govt. Agencies**
- **Advocates**
- **Utilities**

Range of Jurisdictions

- **25 states, 6 Canadian provinces**
- **China, Viet Nam, Mexico, others**



VEIC Work in the US:1995-2008



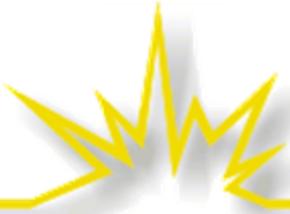
Current client locations in red

A Seamless Process

“Through The Customer’s Eyes”

Example: Efficiency Vermont Residential Retrofit

- 
- **Multiple points of project initiation** (“I want some work on my house”)
 - Directly calls certified contractor (word of mouth, ads, etc.)
 - Calls Efficiency Vermont’s customer service, gets referrals
 - Looks at Efficiency Vermont website, gets referrals
 - **Arranges audit by certified contractor (only certified can provide)**
 - Customer pays \$100 to \$250 (refunded when work approved)
 - **Receives recommendations, bid price, financing offer/analysis**
 - Contractor offers “good”, “better”, “best” job package
 - Effectively sold on at least at “better” level
 - **Work is completed**
 - **May receive Efficiency Vermont QC inspection** (sampling protocol)
 - **Customer makes final payment to certified contractor**
 - Includes rebate, refund of audit cost
 - **Customer makes monthly finance payment**



Creation of New, Competitive Business Opportunities

Example: Efficiency Vermont Residential Retrofit

Any certified product or service provider can:

- Be included on the **referral list** made available to customers by the Portfolio Managers customer call centers and website,
- **Brand** with the Portfolio Manager
- **Offer all of the available incentives/financing packages** to consumers
- Take advantage of available training and marketing services provided to certified businesses



Local Authority/Community Partnerships with the EPM

Who Brings What?

- EPM brings technical and management expertise
- Local Authority/Community brings trust, contact, community-based motivation

Examples:

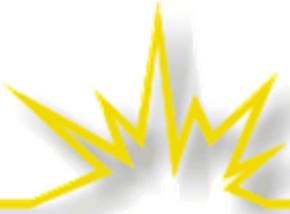
- Property Assessed Clean Energy (PACE)
 - 20 communities with Southern Cal. Edison (the regional EPM)
- Community Heat and Power
 - Group net metering (VT, CA, ME, MA)
 - District heat planning (VT)
- Community & Social Marketing (“Neighborhood” Approach)
 - Low Income Door-to-Door (California, Connecticut)



Importance of Branding

- Build sustained, powerful brands to build consumer recognition and trust
- Positioning as a trusted, independent, expert advisor
- The fewer brands the better (owned by State)
 - Vermont: just “Efficiency Vermont” and “ENERGY STAR”
 - California: just “Flex your Power” and “ENERGY STAR”

What Does the Experience of Efficiency Portfolio Managers Suggest as Key Factors for Success?

- 
- **Clear performance expectations/standards** - much more effective than prescriptive program designs
 - **Motivation to meet aggressive performance expectations/goals**
 - **Portfolio Manager flexibility to meet goals** - as both strategy developer and implementation manager
 - Modifying strategies and implementation as needed
 - ...along with a broad portfolio of responsibilities**
 - All fuels, All customers, Efficiency, micro-generation, etc.
 - Take advantage of synergies instead of confusing the market with fragmented programs and multiple implementers
 - ...with clear penalties/rewards aligned with goals**
 - **Performance (e.g., carbon reductions) independently measured and verified**



Experience with Portfolio Management Approach to Energy Efficiency Delivery

North American experience suggests portfolio management enables much deeper savings. For example:

- Vermont has turned electric load growth negative
- Massachusetts on path to achieving 2-3% savings per year
 - also turning load growth negative
- California saw annual energy savings triple in 4 years

These and other similar experiences followed periods of much more fragmented approaches to the market that were much less successful.



Addressing Fuel Poverty – US Practice

- **Basic challenge: Supporting consumption vs. supporting efficiency – getting the balance right**
- **Bill subsidy mechanisms:**
 - Tax revenues (LIHEAP) – mostly federal tax revenues (\$2,563M in 2008)
 - Utility-based rate discounts: low-income rates, supported by general rates
- **Efficiency programs targeted to social housing and the fuel-poor:**
 - Weatherization Assistance Program, (WAP) administered through local Community Action agencies (\$239M in 2008 to serve 91,660 homes)
 - EE programs – EPM have goals and benefits for low-income households
- **How is low-income weatherization funded?**
 - WAP program is mostly **federal tax revenues** (perennial budget problem)
 - Utility and EPM funding – mostly **wires charges**
 - Now emerging: use **carbon auction revenue** to fund EE, including low-income whole house retrofits (Vermont and other RGGI states)



Funding options and lessons

- Challenge: how to finance EE programs that are now much larger and across fuel types?
- Adequate and stable – not annual appropriations
- *Revenue collection* and *program administration* can be different.
- Can fund via market costs (provider obligation), “wires and pipes” charge, tax revenues, or carbon charges
- Funding through “wires and pipes” charges in North America is considered part of providing safe and reliable energy services
 - Regulator authorizes collections for service -- not public Treasury receipts.



Tapping Carbon Markets for Energy Efficiency

- “Cap and Invest” now the leading allocation idea for the US power and gas sectors
- Key idea: Sell allowances, invest carbon revenue in low-cost carbon reduction (esp EE)
- 10 RGGI states now dedicate >80% of allowance value to clean energy (~65% to EE)
- Congress (both leading bills): direct allocation to DNOs provides consumer benefits, avoids Treasury receipt of sales revenues



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For More Information On “Best Practices”

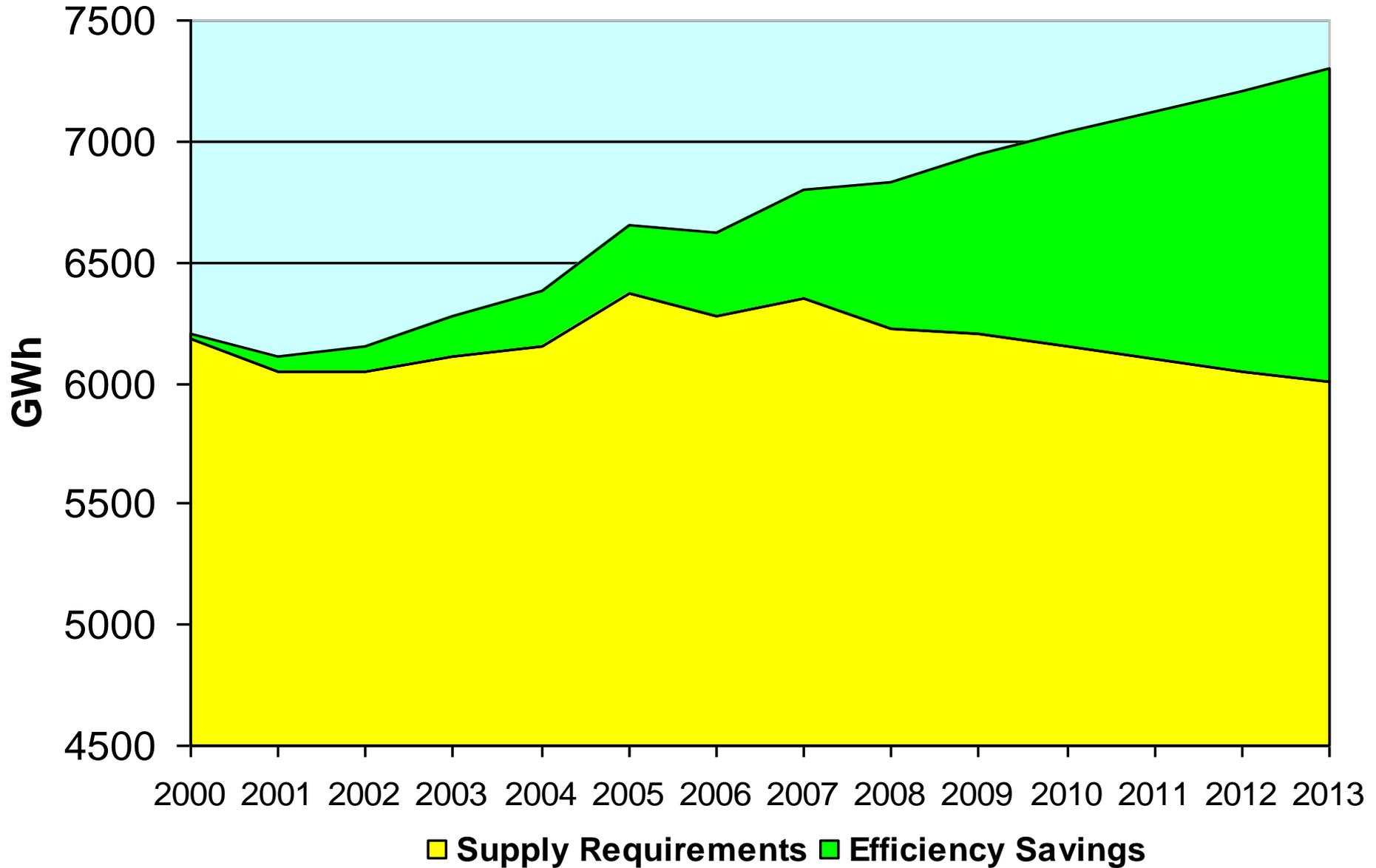
National Energy Efficiency Best Practices Study
<http://www.eebestpractices.com>

“Offer one bundle that may consist of energy efficiency, renewables and financing measures from several different organizations but are seamless to the customer.”



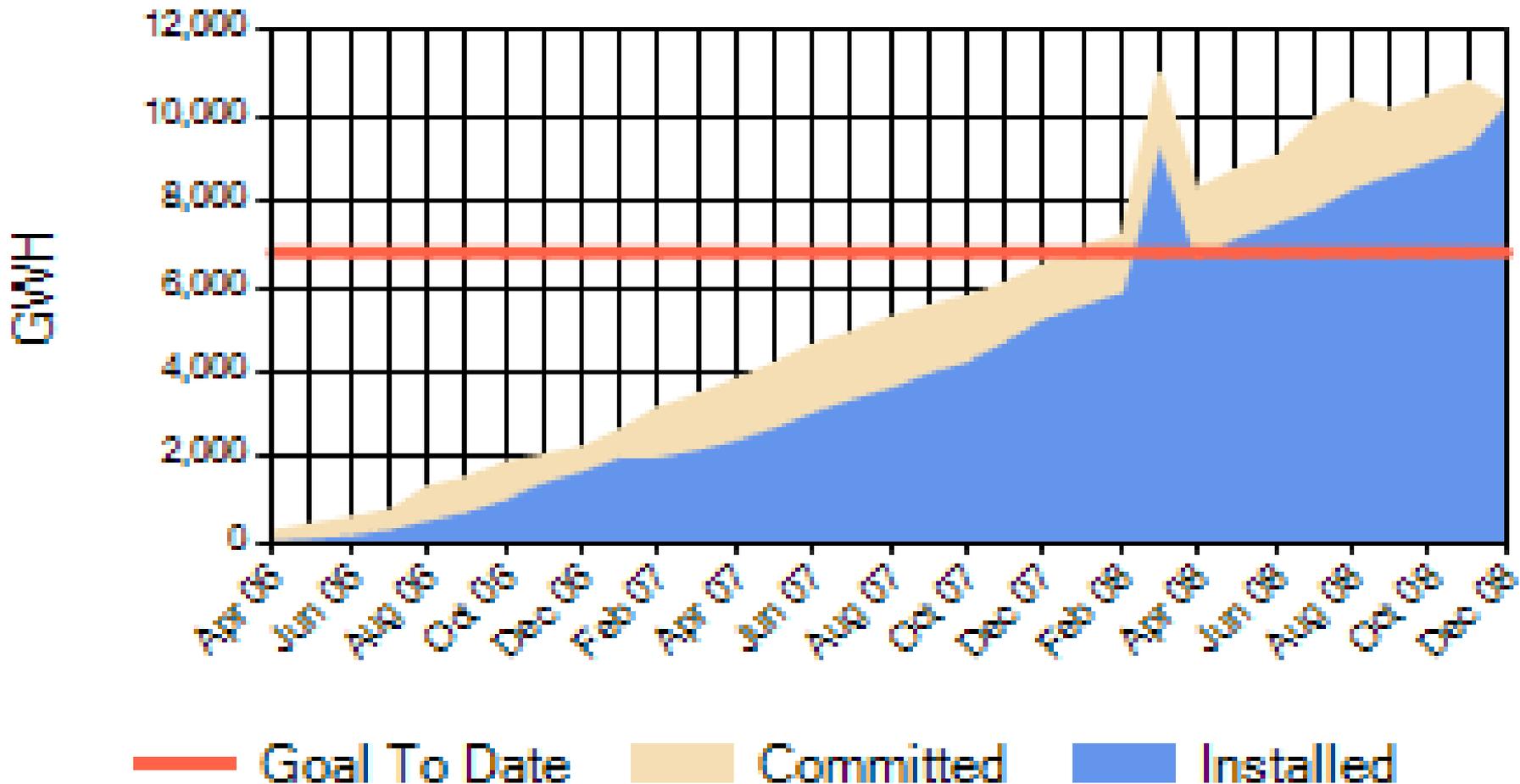
ADDITIONAL SLIDES

Cumulative Impact of Efficiency on Growth in Vermont's Statewide Annual Electric Supply Requirements



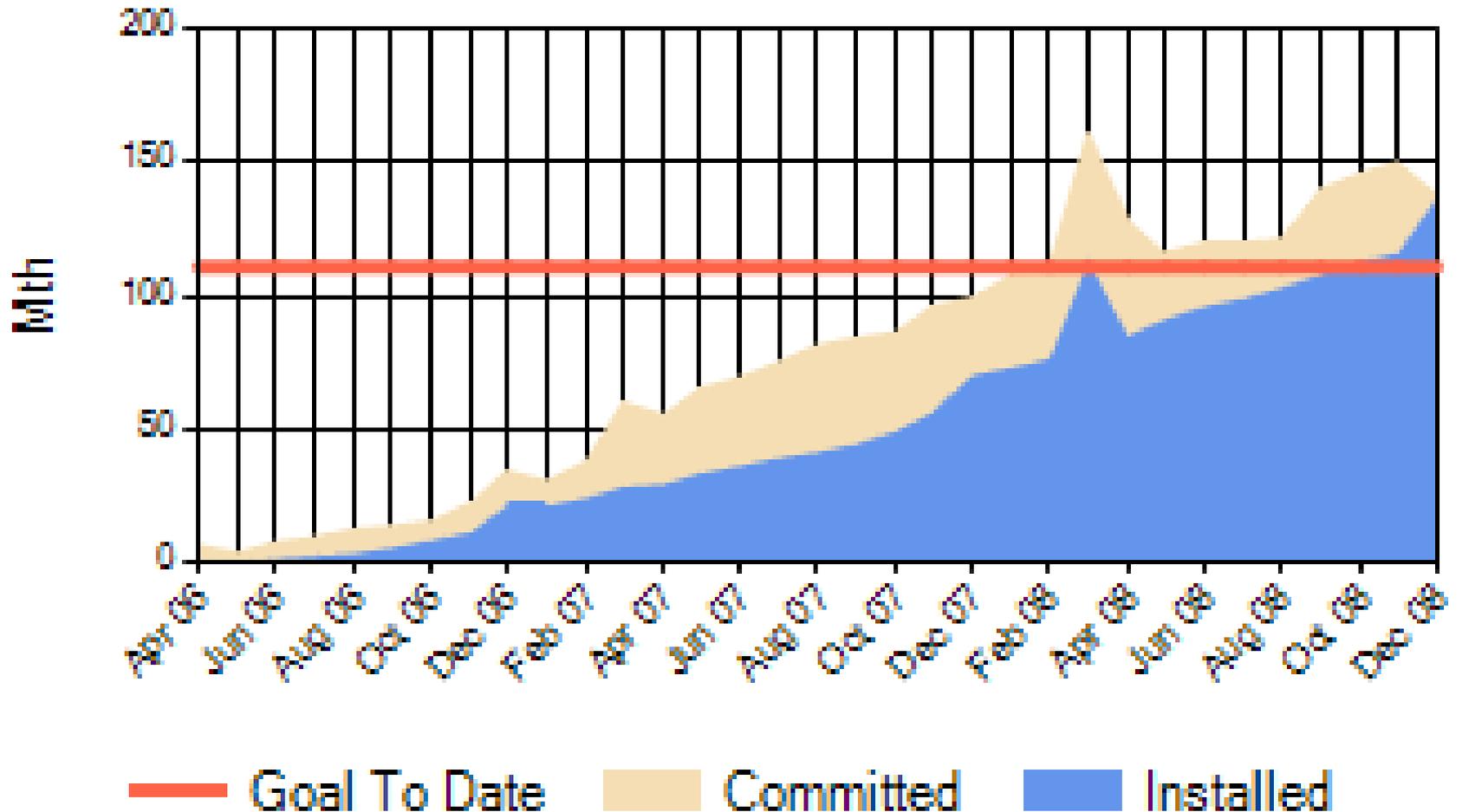
California Investor-Owned Utilities—Combined, 2006-2008 funding cycle

All Utilities - GWH Installed and Committed Savings

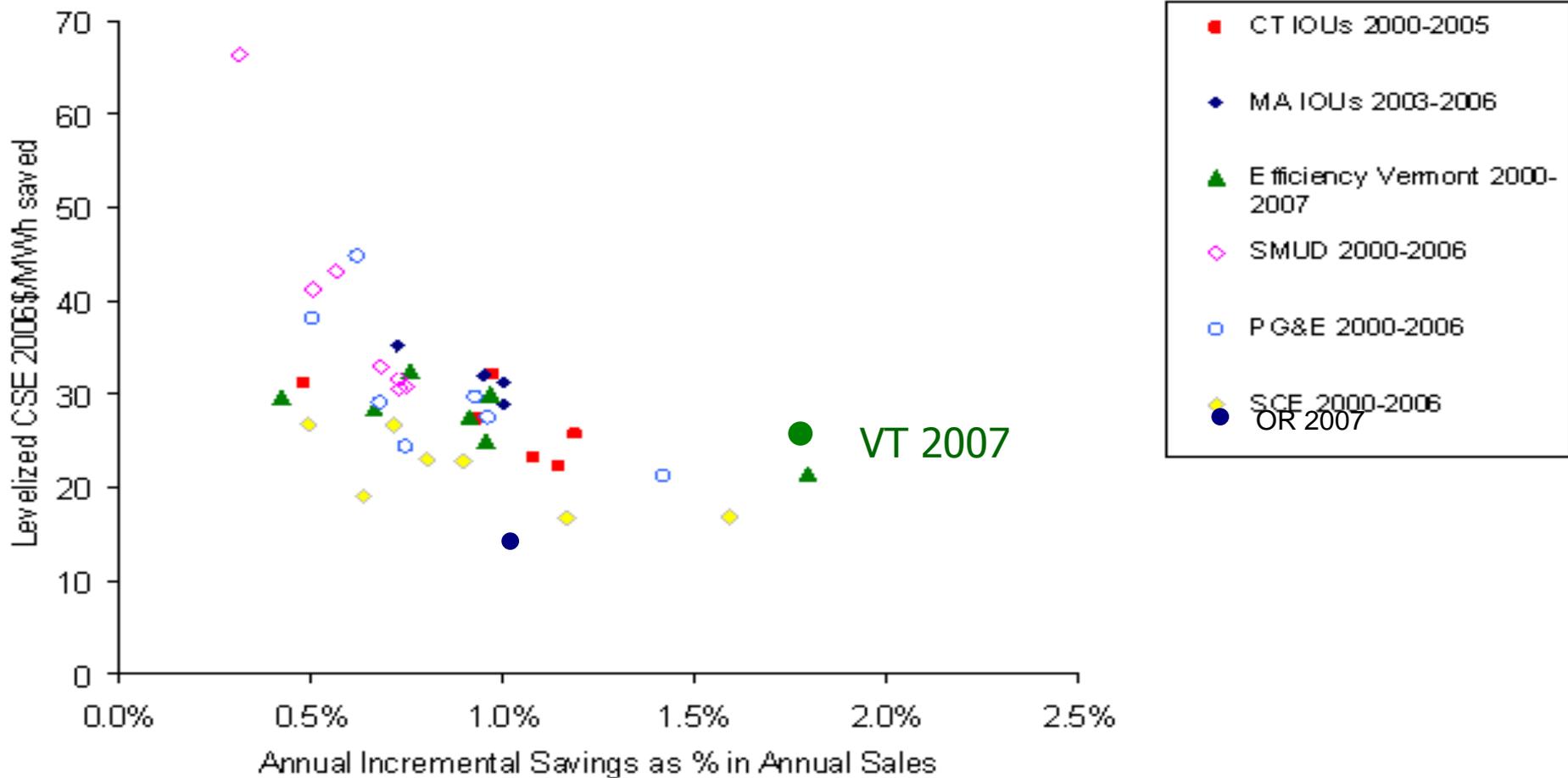


California Investor-Owned Utilities—Combined, 2006-2008 funding cycle

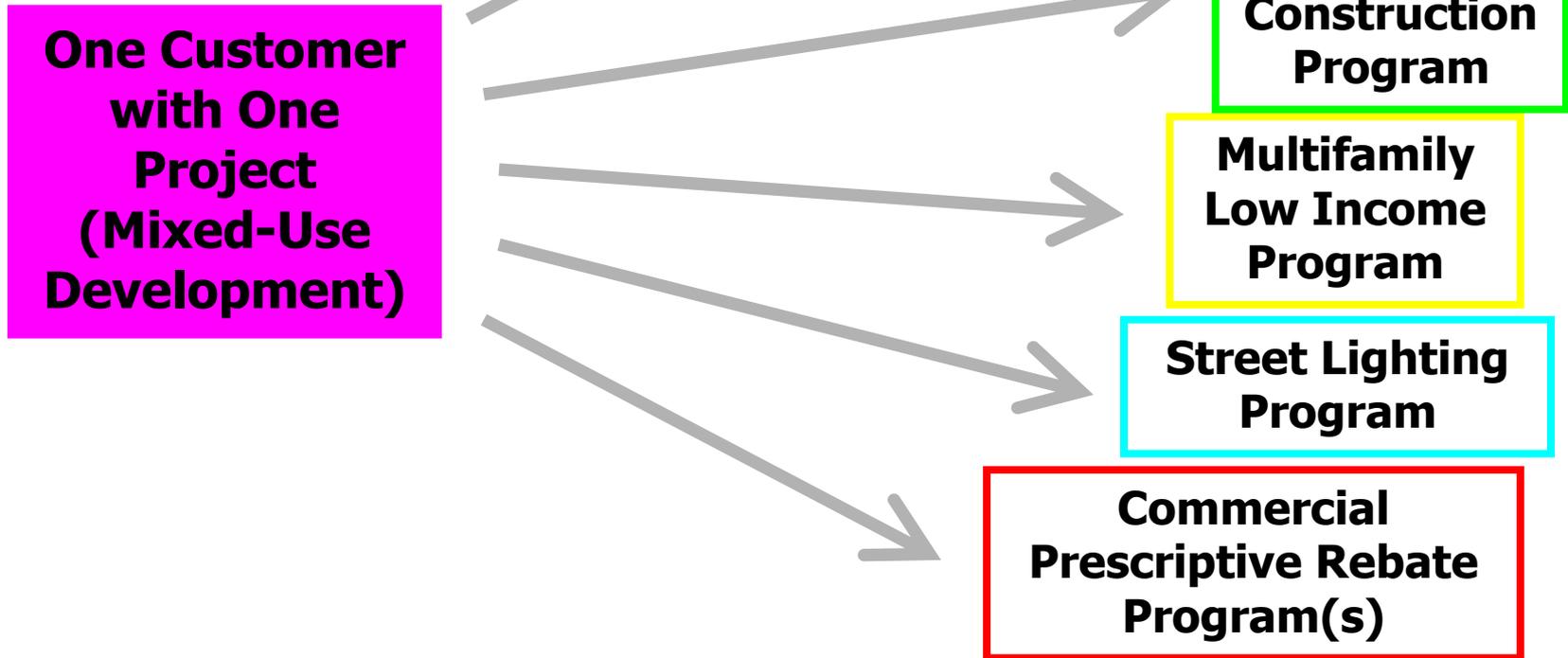
All Utilities - Mth Installed and Committed Savings



Cost and Savings Performance – Ambitious programs can cost less per MWh saved



Programs Model



Markets Model

