



Distributed Resources, the Decoupling Model, and the Green Communities Act

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Massachusetts Department of Public Utilities**

**Roundtable
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Disclaimer

Comments reflect my personal observations, and do not necessarily reflect the position of the Commonwealth of Massachusetts, the Department of Public Utilities, or other members of the Commonwealth Utilities Commission



Overview

- The electric and natural gas pricing context
- How the Green Communities Act responds to the pricing challenge
- Decoupling
 - Explanation of decoupling model
 - Procedural History of D.P.U. 07-50





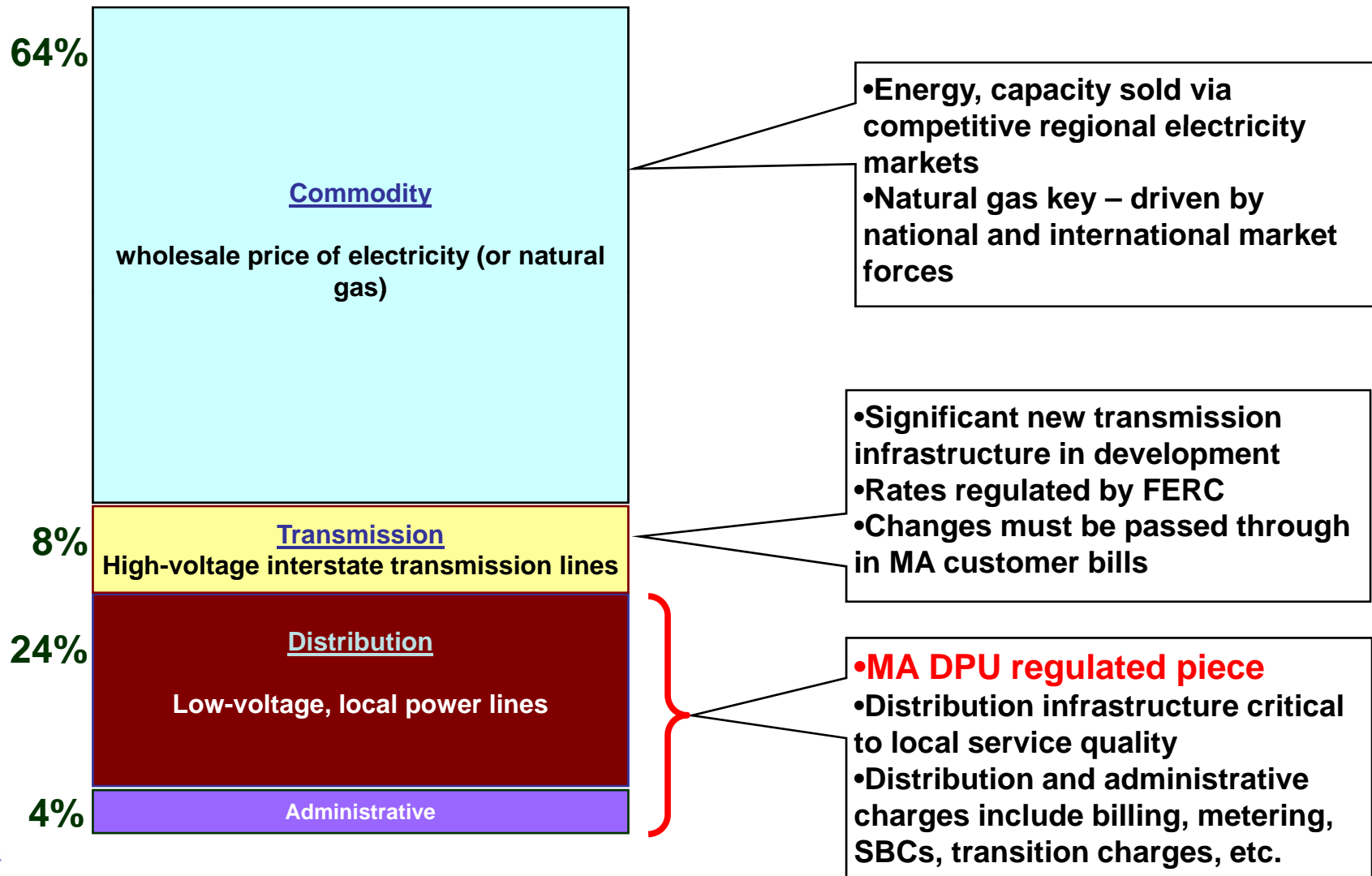
Energy Pricing Context and the Green Communities Act

Pricing

- What are our key electricity and natural gas pricing challenges?
- How does the GCA address these challenges?



Proportional Components of Electric Rates (Example using MECo (NGrid) rates, 5/2007)



Sample Electric Bill: MECo Low-Income Customer

Duplicate

nationalgrid

To Reach Us
 Customer Service: 1-800-322-3223
 Credit Department: 1-866-395-0315
 E-mail: CustomerService@us.ngrid.com
 Website: www.nationalgrid.com

Pay This Amount [REDACTED] SERVICE ADDRESS [REDACTED] LOAD ZONE SEMASS 405289141263025
 SODE, CV. 15

\$55.28 SERVICE PERIOD MAY 17 TO JUN 18 2007 32 DAYS TYPE OF METER READING ACTUAL

Account Number [REDACTED]

METER NUMBER	RATE	METER PRESENT	READING PREVIOUS	KWH USAGE
013818689	R-2	17371	17060	311
012439154	R-2	7786	7640	146
				457

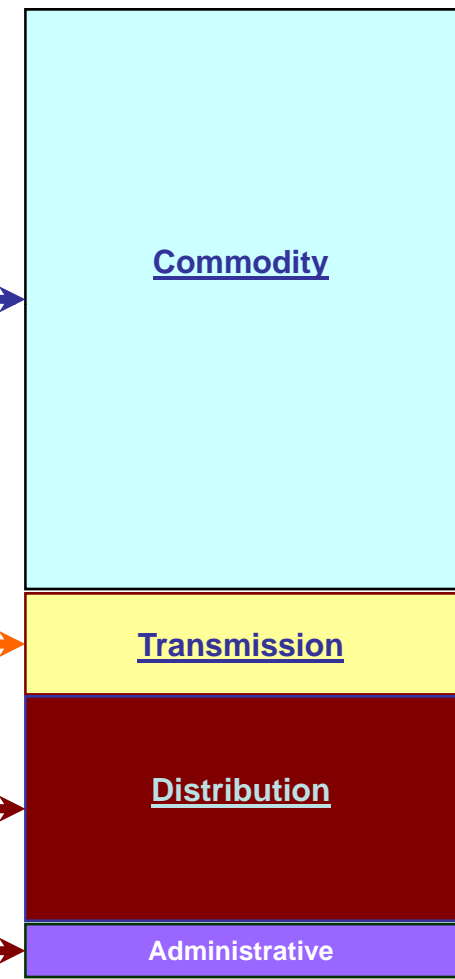
Bill Date JUN 19 2007

NATIONAL GRID RATE: RESIDENTIAL LOW INCOME R-2

NEXT METER READING DATE JULY 18

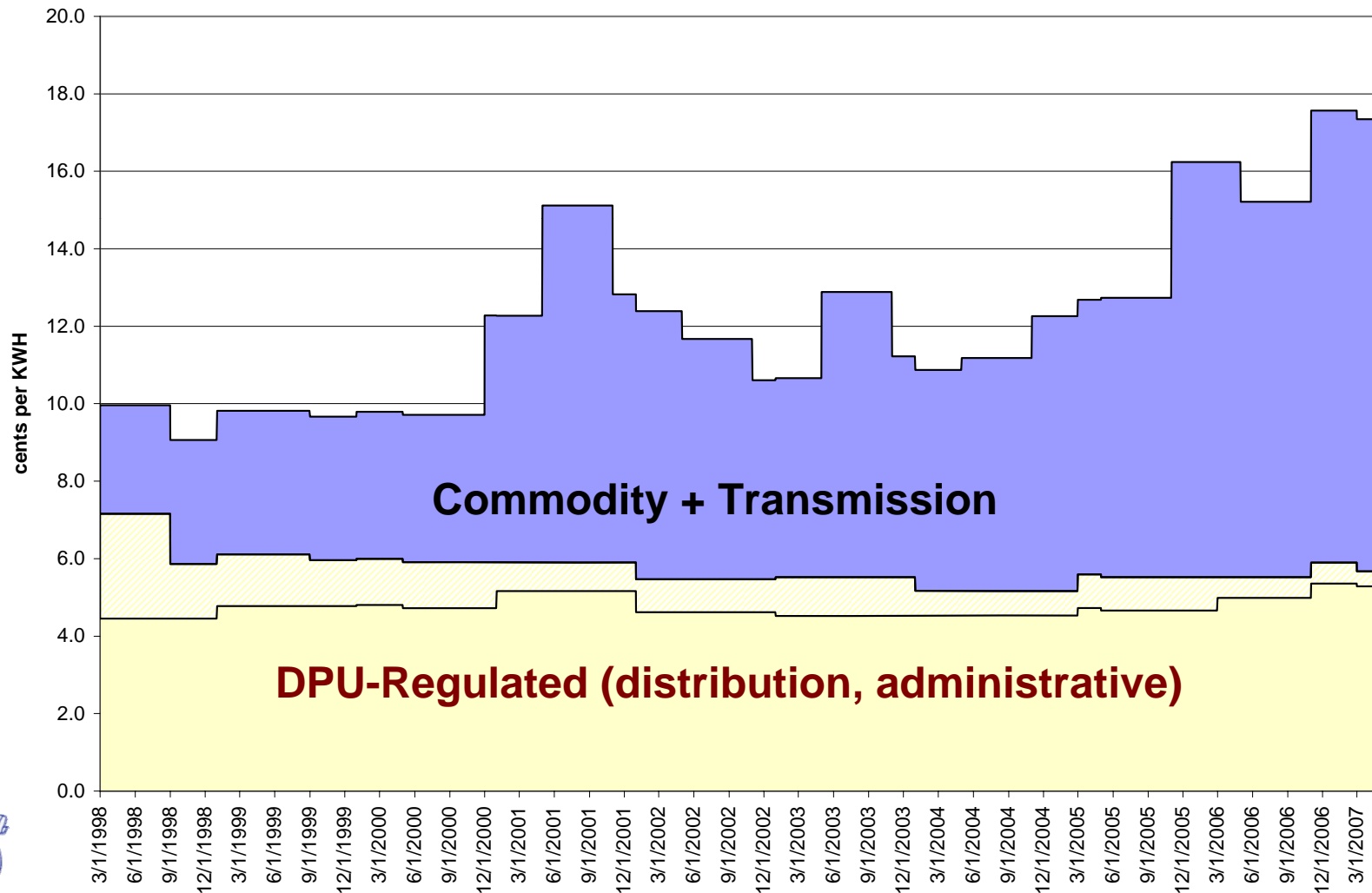
PREVIOUS BALANCE \$ 50.16
 PAYMENT-THANK YOU 06/12/07 -50.16
 BALANCE FORWARD .00

MONTH	TOTAL KWH	DELIVERY SERVICES	AMOUNT
J 07	457	CUSTOMER CHG	3.96
M 07	397	DISTRIBUTION CHG .00381 X 457 KWH=	1.74
A 07	467	TRANSITION CHG .00361 X 457 KWH=	1.65
M 07	596	TRANSMISSION CHG .01238 X 457 KWH=	5.66
F 07	524	ENERGY CONSERVATION .00250 X 457 KWH=	1.14
J 07	599	RENEWABLE ENERGY CHG .00050 X 457 KWH=	.23
D 07	532	DELIVERY SERVICE	14.38
N 07	428	WATER HTR CONTROL CR	-5.78
O 07	378	TOTAL DELIVERY SERVICES	\$ 8.60
S 07	493	SUPPLIER SERVICES:	
A 07	547	GENERATION CHARGE	
J 07	503	BASIC SERVICE -FIXED .10215 X 457 KWH=	46.68
J 06	417	TOTAL COST OF ELECTRICITY	\$ 46.68
		TOTAL CURRENT BALANCE	\$ 55.28
		ACCOUNT BALANCE	\$ 55.28



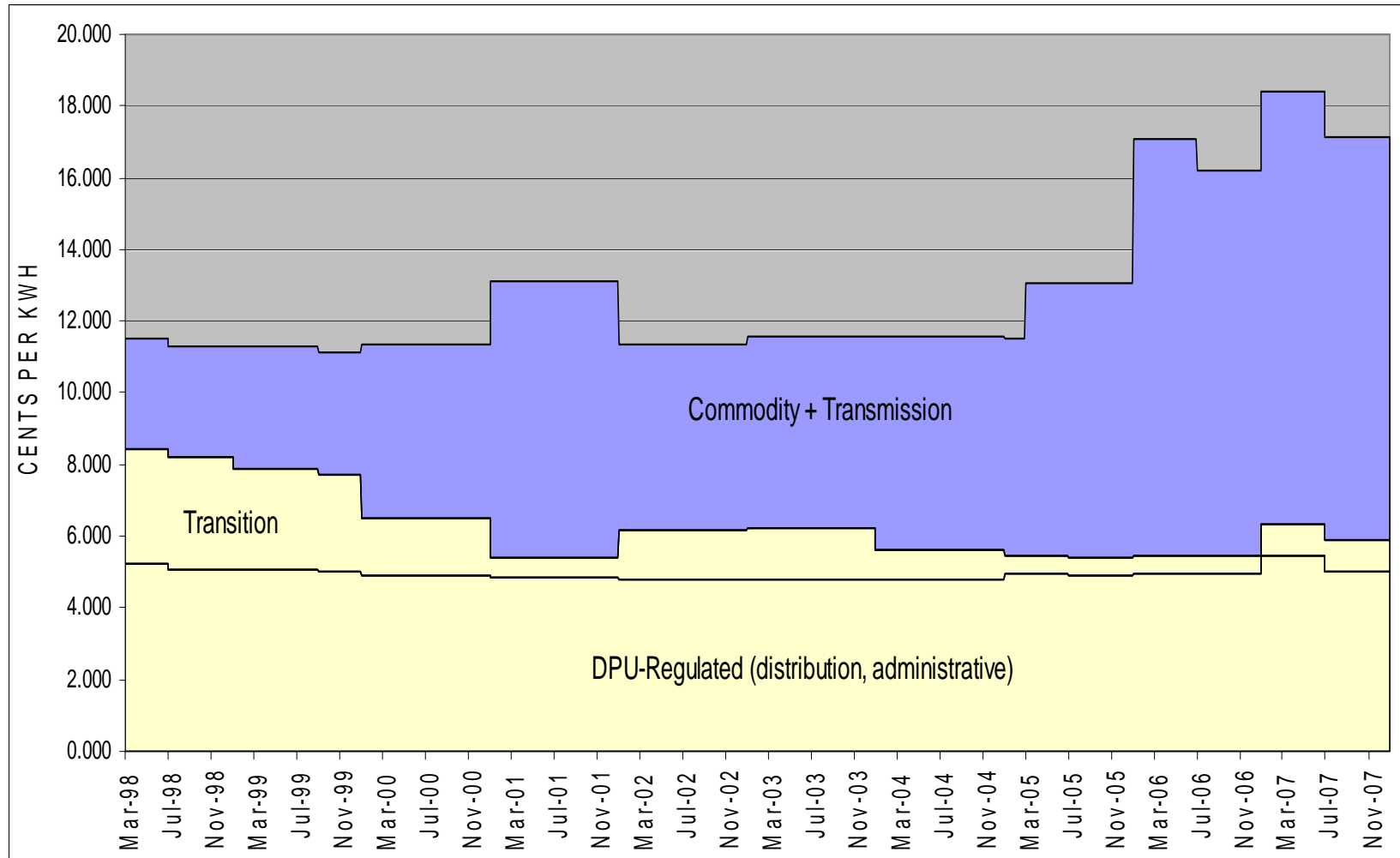
How Has This Changed in Recent Years? Trajectory of Rates (MECo, since 1998)

MECo Residential Rates



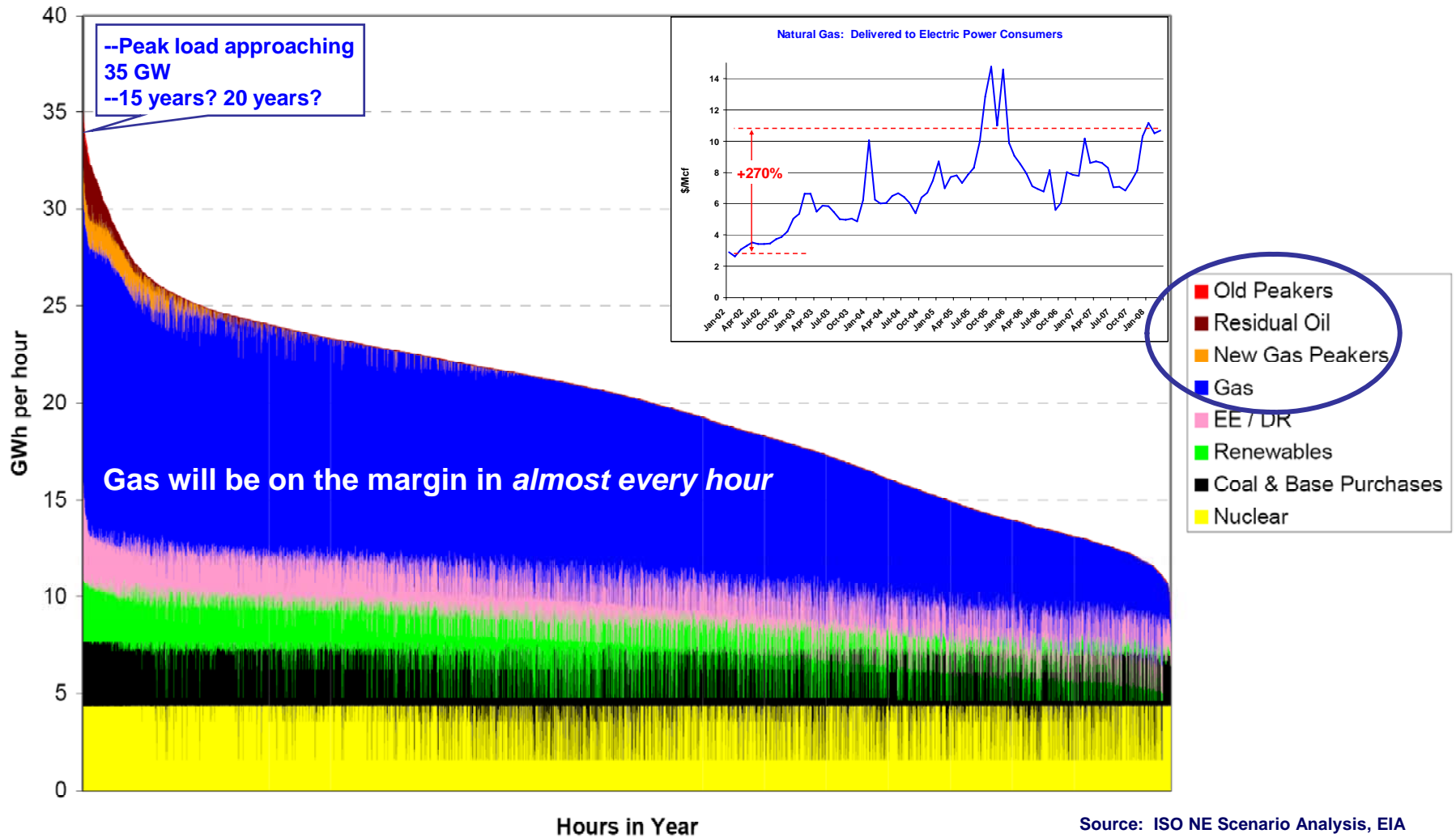
Trajectory of Rates (WMECo, since 1998)

WMECo Residential Rates



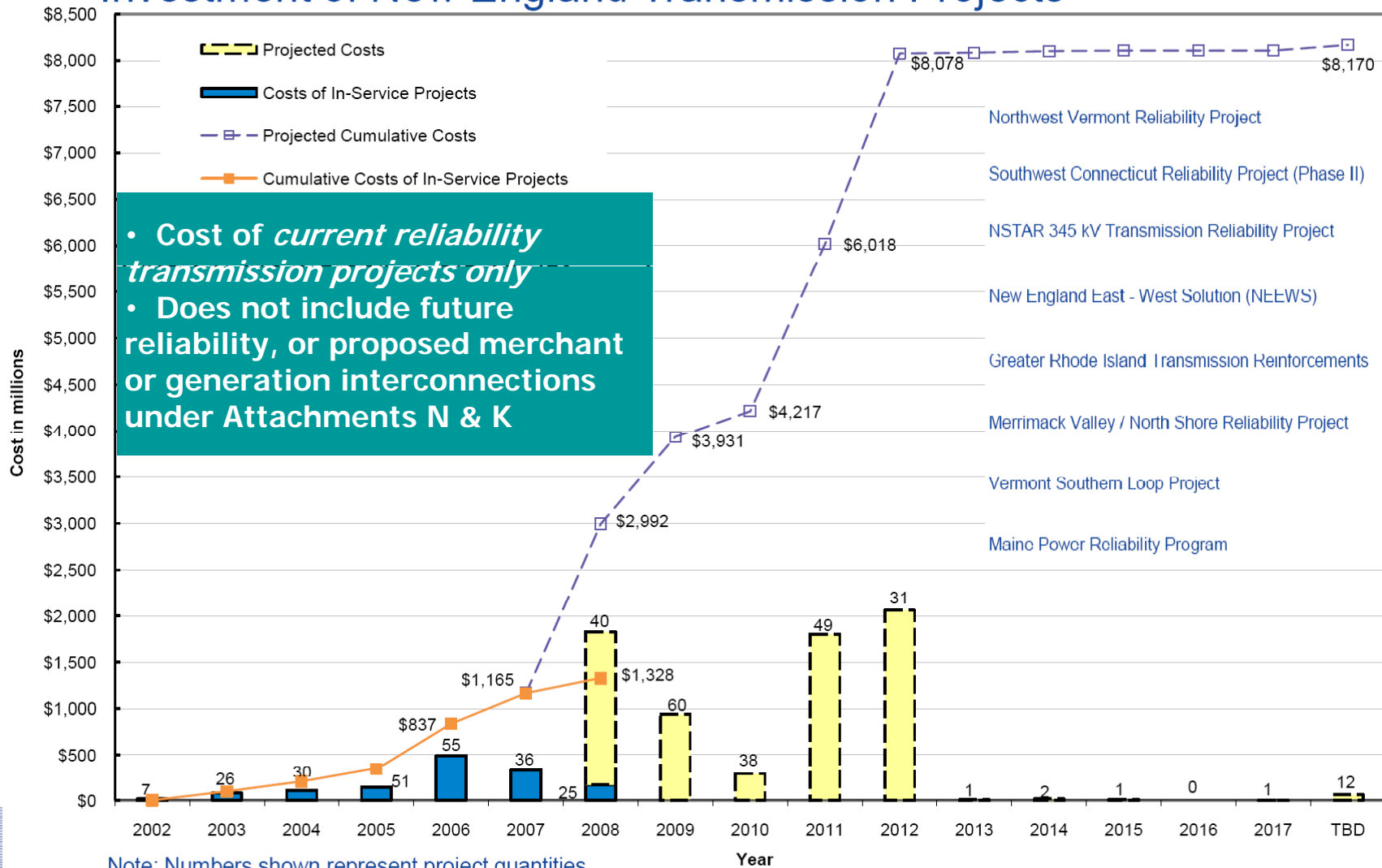
How Will It Change in the Future?

Annual Energy Production Duration Curves
EE / DR Case - Common Assumptions



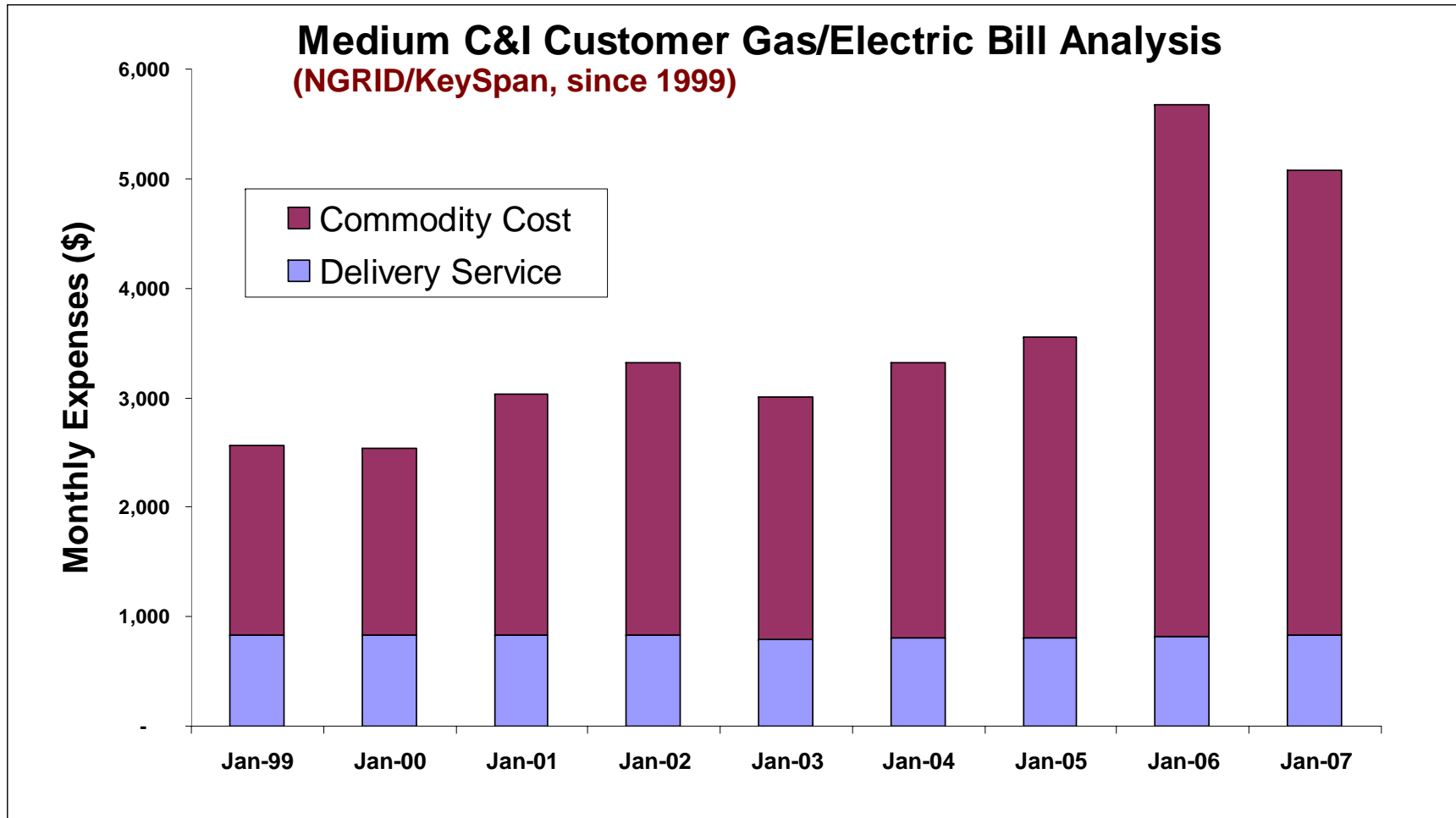
Transmission Rate Increases on the Horizon...

Investment of New England Transmission Projects



SAME STORY FOR NATURAL GAS

Combined Gas and Electric Monthly Bills



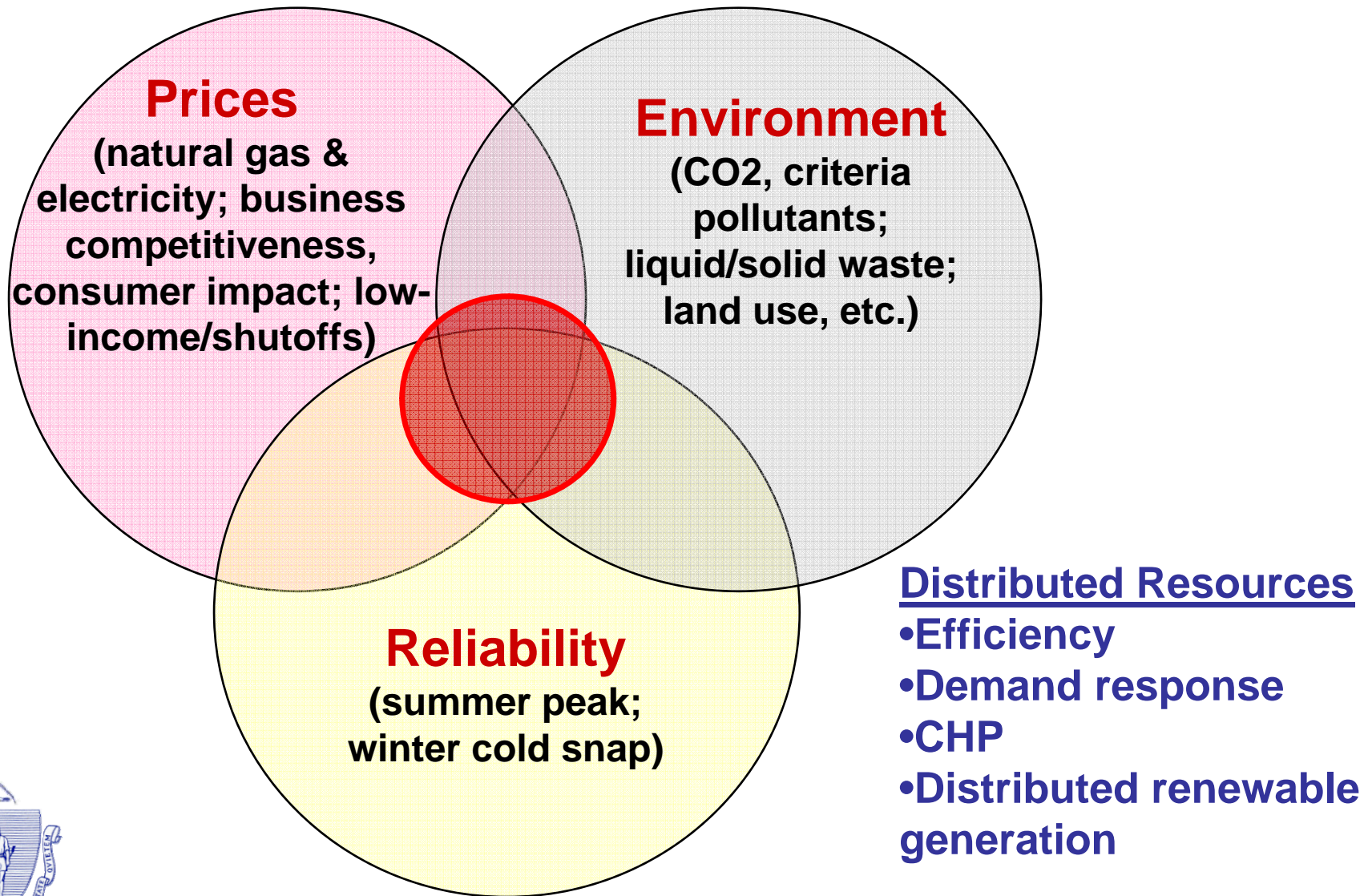
Level and Variation in Red Bar Driven By Market Price of Natural Gas

Pricing

- Prices have increased dramatically in 10 years
- Every reason to believe price increases and volatility will continue
- Main price drivers are beyond our control
 - National/international natural gas commodity markets
 - FERC-regulated transmission
- ...**EXCEPT**
 - Maintain discipline and efficiency in distribution rates
 - *Reduce demand, add local and regional renewable resources* to lower bills, moderate influence of commodity prices



Focus on Distributed Resources



Response: Green Communities Act

The Green Communities Act directs the DPU to review and implement new programs and regulations for distributed resources and renewable energy:

- Expanded energy efficiency plans
- Net metering for distributed generation
- Ownership of solar generation by electric distribution companies
- Long-Term Contracts for renewable energy
- Energy Pay and Save pilot programs for customers
- Smart Grid pilot programs



So, Will GCA Help Reduce Demand, Add Local Renewable Resources?

GCA Provision	Demand	Local, Regional Generation	Involvement
All Cost Effective Energy Efficiency	↓	↑	Utilities, DOER, EEAC members, gas/electricity customers
Long-Term Contracts		↑	Utilities, local renewable developers
Solar Generation Ownership		↑	Utilities
Building Efficiency Codes	↓		Developers, residents
State Building Efficiency, Procurement	↓	↑	State agencies, competitive suppliers
Net Metering		↑	Utilities, customers
RPS, AEPS		↑	Utilities, DOER
Green Communities	↓		Municipalities, MRET
Voluntary Green Programs		↑	Utilities, competitive suppliers
Smart Grid, Energy Pay & Save	↓		Utilities, EOEEA, customers

- Yes
- Virtually all provisions point in the right direction from a price and cost control perspective
- Utility involvement and commitment will be critical to the success of the GCA, and to the long-term moderation of energy prices

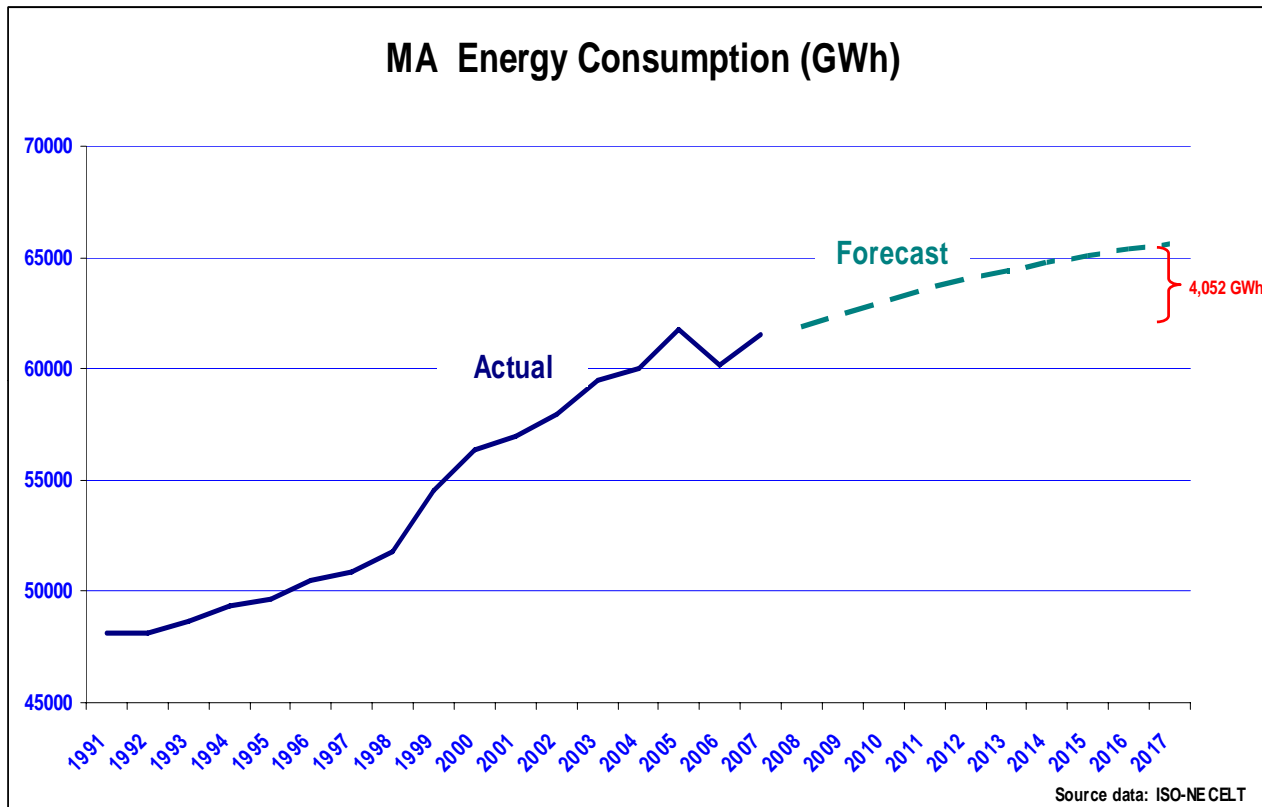


MA Renewable Potential

- Navigant study of MA renewable potential
- Commissioned by DOER and MRET
- Focus: solar, wind, biomass, river, and ocean renewable resources in MA (9 technologies)
- Different development perspectives
 - *Theoretical Potential*: total renewable resources in MA
 - *Technical Potential*: accessible resources not excluded due to land use restrictions, shipping lanes, protected habitats, etc.
 - *Economic Potential*: accessible resources in pipeline, or that may be economic relative to prevailing electricity prices over time
- Findings:
 - Significant theoretical, technical potential
 - Economic potential sufficient to meet MA RPS by 2020
 - 3,500 MW, with annual generation of about 10 TWh



Can We Eliminate Growth?



- Tripling of energy efficiency – ?
- Net metering to 1% of peak load – ?
- State buildings, building codes - ?
- Green communities, smart grid, pay & save - ?
- Distributed generation (RPS, EE, etc.) - ?

- Time will tell
- Will depend on effectiveness of GCA implementation, constructive participation of utilities, non-utility parties, communities, consumers
- At least a significant moderation for some period of time





The Decoupling Model

Traditional Ratemaking

STEP ONE: Identify Annual Revenue Requirement (RR)

(\$)

TEST YEAR EXPENSES:

- Wages and Benefits
- Annually-recurring expenses
- Depreciation on plant in service
- Taxes
- Etc.

ADJUST FOR

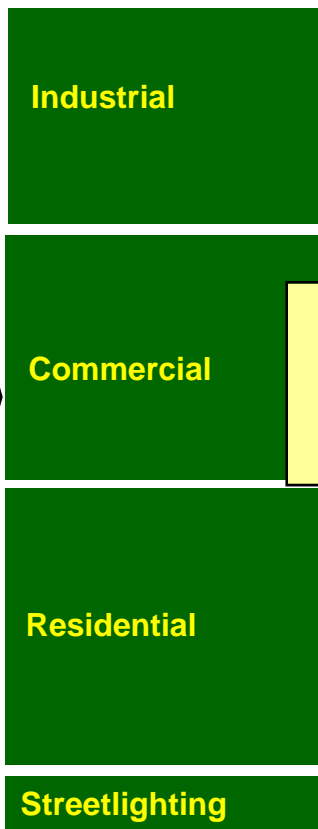
- Known and measureable changes relative to test-year conditions

ADD RETURN ON INVESTMENT

- Prudently-incurred investment
→ Rate base
- Allowed rate of return on rate base

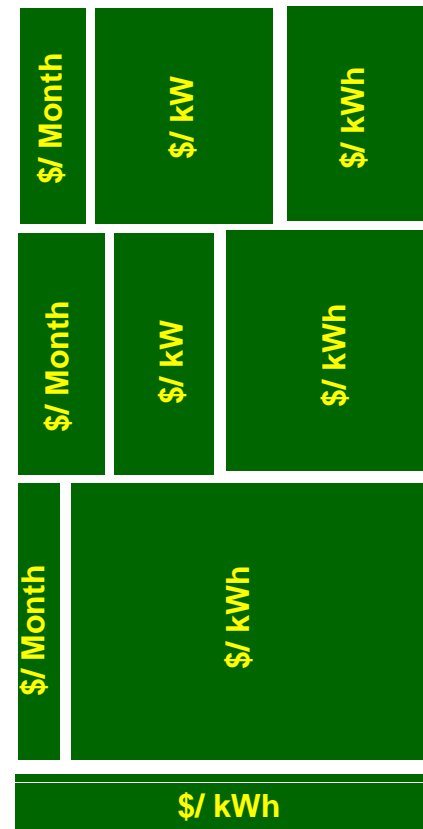
STEP TWO: Allocate RR to classes of customers

(\$ per customer class)

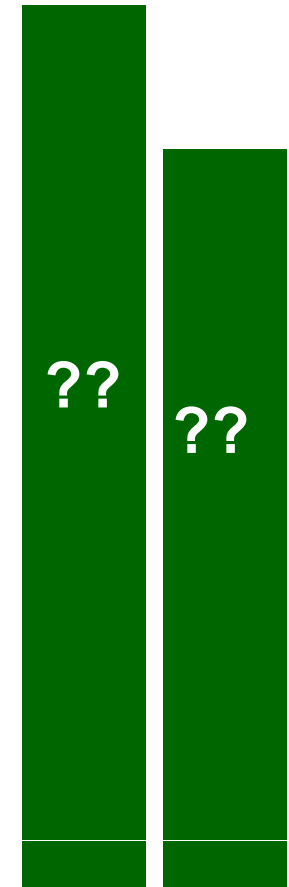


STEP THREE: Design rates to recover customer class revenues

(Customer charge, demand charge, energy charge)



Future Years



The Decoupling Concept

STEP ONE: Identify Annual Revenue Requirement (RR)

(\$)

TEST YEAR EXPENSES:

- Wages and Benefits
- Annually-recurring expenses
- Depreciation on plant in service
- Taxes
- Etc.

ADJUST FOR

- Known and measureable changes relative to test-year conditions

ADD RETURN ON INVESTMENT

- Prudently-incurred investment
→ Rate base
- Allowed rate of return on rate base

STEP TWO: Allocate RR to classes of customers

(\$ per customer class)

Industrial

Commercial

Residential

Streetlighting

STEP THREE: Design rates to recover customer class revenues

(Customer charge, demand charge, energy charge)

\$/ Month

\$/ kW

\$/ kWh

\$/ Month

\$/ kW

\$/ kWh

\$/ Month

\$/ kWh

\$/ kWh

Future Years

ANNUAL RECONCILIATION



D.P.U. 07-50

- Purpose of investigation
 - Eliminate potential barriers to aggressive pursuit of demand resources
- Main Principles of decoupling
 - Sever utility revenue recovery from sales volumes
 - Meet statutory obligations and precedent of fairness, equity, continuity, etc.



Commenters and Participants in D.P.U. 07-50

- Electric & Gas Distribution Companies (8) and Consultants (2)
- Consumer Groups for small customers (1)
- Consumer Groups for large customers (9)
- Environmental Advocates and Associations (6)
- Demand Response Service Providers (4)
- Retail Competitive Suppliers/Aggregators (4)
- Government Entities (2)



Procedural History of D.P.U. 07-50

- Notice of Investigation Issued – June 2007
- 1st Round of Written Comments Filed - September 2007
- Five Days of Panel Hearings – October/November 2007
- 2nd Round of Comments Filed – December 2007
- Department Order issued July 16, 2008
- Motions for Reconsideration and/or Clarification filed August 2008
 - As a result, remains a pending matter



Wrap-up

- Rates paid by electricity and natural gas customers in Massachusetts are intensely affected by movements in natural gas commodity markets, and growth in transmission
- Expansion of distributed resources will be key to future trajectories of price, reliability, and environmental impact of energy systems
- Governor Patrick and the Legislature have acted to unleash distributed resources and chart a lower-cost, greener energy future for our region

Now, the difficult work begins...





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