Valuing Natural Gas Energy-Efficiency Resources

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AESP's Summer Conference & Expo

Exploring the Next Generation of EE Programs – A North American Perspective

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Acknowledgements

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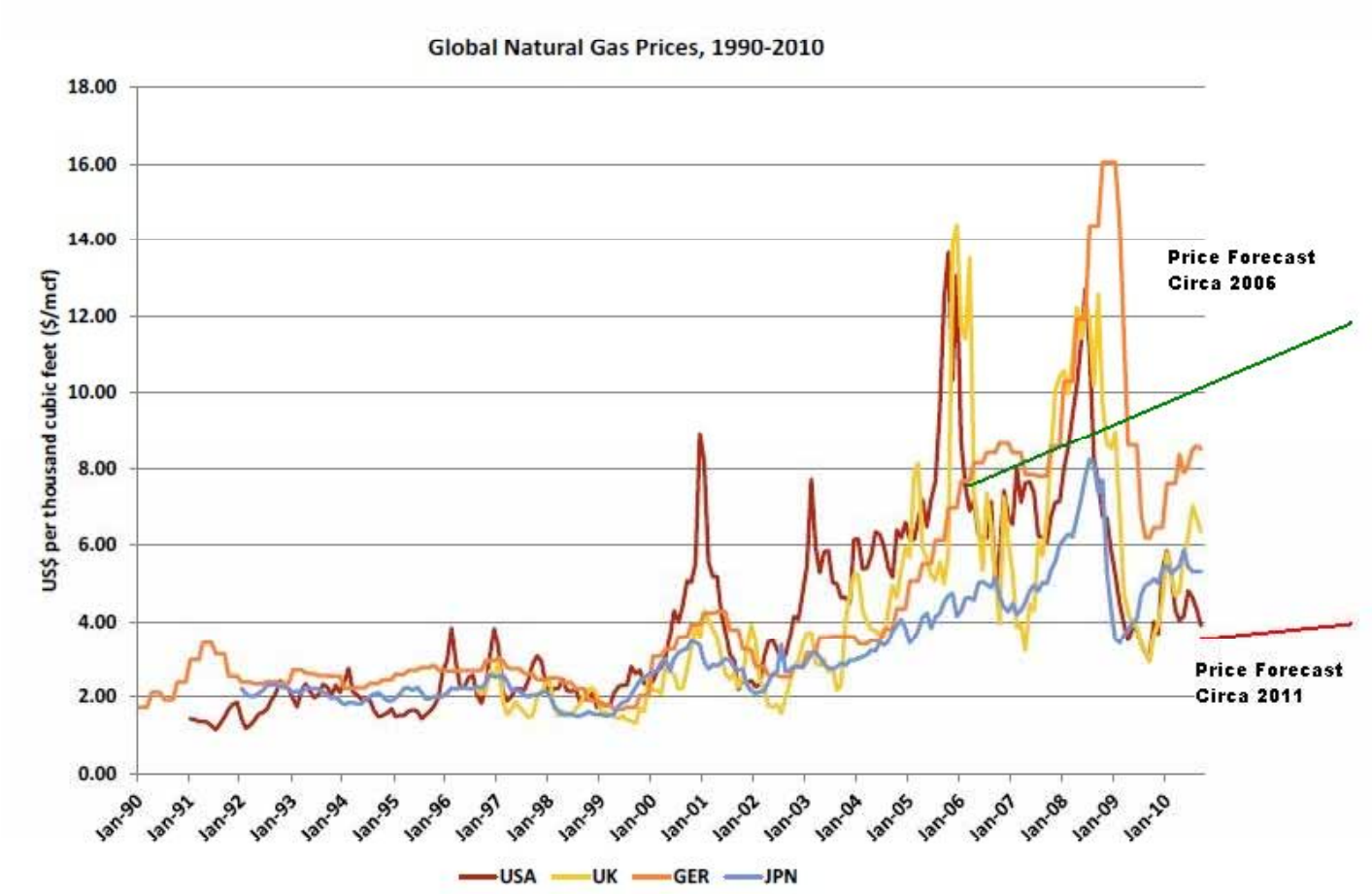
Overview

- Natural Gas DSM Cost-Effectiveness Challenges
- Potential Solutions

The Big Picture Issues

Global Natural Gas Prices 1990-2010



Why Natural Gas DSM When End-User Consumption is Declining?

- The application of the Total Resource Cost (TRC) B/C test to natural gas programs does not have the IRP-based history of electric counterparts
- While natural gas EE programs also go back to the 1980s, their inception was not due exclusively to resource planning criteria or to restrict the growth of natural gas consumption
- In fact, some regulators and third-party stakeholders asked utilities to offer electric-to-gas fuel switching programs

Why Natural Gas DSM When End-User Consumption is Declining?

- In addition to resource planning, historically the drivers of natural gas EE programs were:
  - Equitable treatment, given the end-use "market share wars" between electric and natural gas utilities
  - Growth of natural gas electric generation—and higher fuel prices—resulting in a perceived need to ascertain the economics of natural gas energy-efficiency programs.
  - Environmental benefits, including GHG reductions

Why Natural Gas DSM When End-User Consumption is Declining?

- TRC analysis of natural gas EE programs are based on forecasts of natural gas prices decades into the future
  - This means that natural gas will be selected in resource planning unless energy efficiency is less expensive
  - Application of this approach worked adequately until the recent collapse in gas prices

What are the Potential Solutions to Programs Failing TRC Analyses?

Program Design Solutions	• Cost-effective 'super-programs'
Data Input Solutions	• Planning assumptions • Alternate forecasts of gas prices
Policy Solutions	• Different CE tests • Different avoided costs

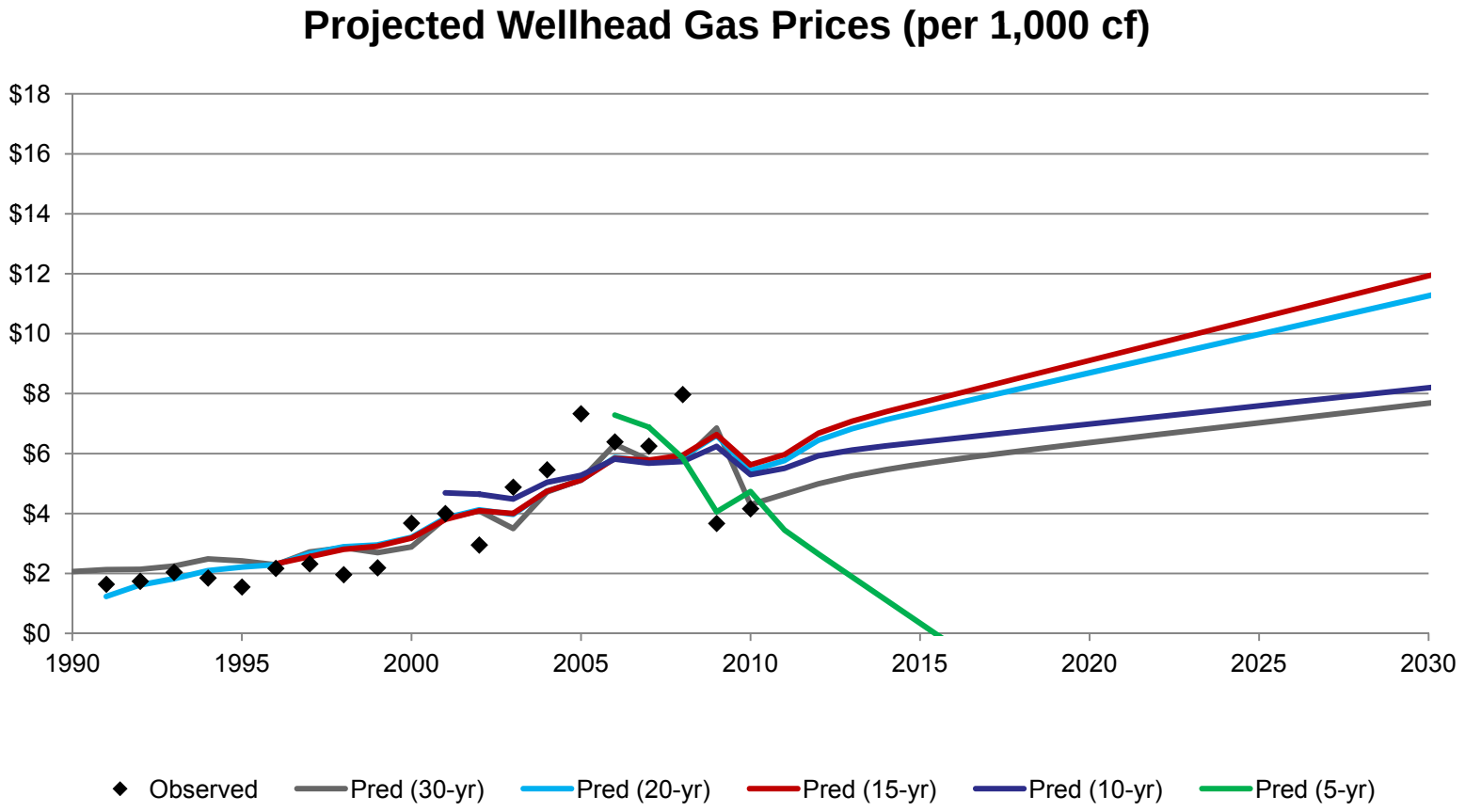
Program Design Solutions: Some Examples

- Conduct B/C Analysis at the Sector level
  - E.g., Residential "Program"
  - Contains enough cost-effective measures to balance out some cost-ineffective measures
- Or do this at the overall Portfolio level
- Dual-fuel utilities: combine gas and electric portfolios for B/C analysis purposes

Data Input Solutions

- Use “Old” Avoided Costs
- Use historical gas prices rather than forward price curves or futures for the natural gas price forecast

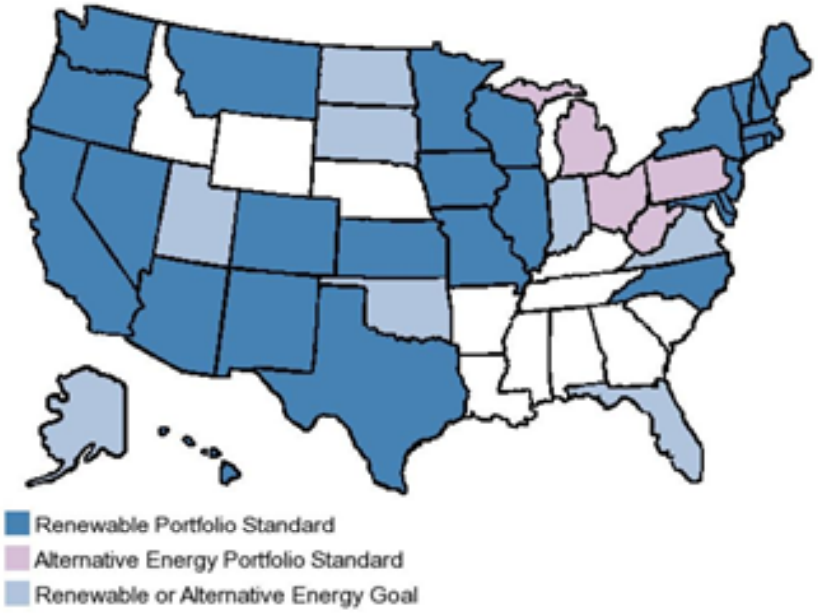
Data Input Solutions: Alternate Natural Price Projections Based on Regression Analysis



Policy Solutions

- Use another test such as the Utility Cost Test or Societal Test
- Augment TRC with the following:
  - Lower discount rate
  - Environment benefits
  - Other non-energy benefits (NEBs)
  - GDP and Employment Multipliers
- Base avoided costs on renewable resources

Renewable Portfolio Standards and EE

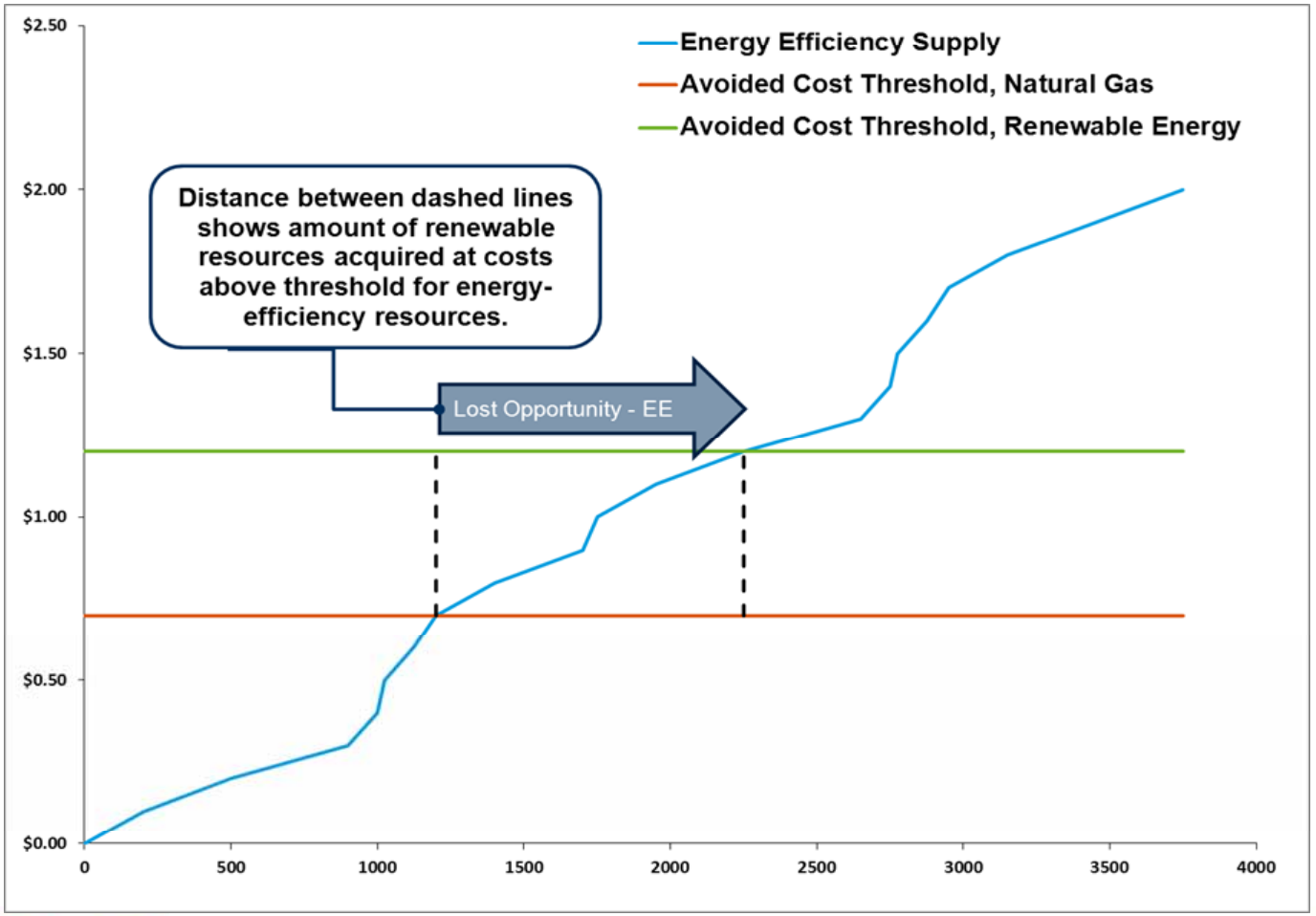


- Even if environmental adders are added to the TRC test, they have been relatively low and do not approach the costs of clean or renewable energy
- This is clearly inconsistent with state RPS requirements where EE is explicitly eligible as a renewable resource, as well as jurisdictional requirements where separate statues promote EE and RPS
- Since policy objectives include the reduction of GHGs as part of optimizing the energy supply system, the logic of screening energy-efficiency investments against the cost of natural gas is questionable

Rationale for Using Renewable Resource Costs as the Avoided Cost: Electric Programs

- Feed-in tariffs have long offered payments for geothermal, wind, and solar generation at prices that exceed traditional electric avoided costs
- The feed-in tariffs approximate the costs of developing these resources to further GHG objectives
- This begs the question, why shouldn't the cost-effectiveness of EE resources be evaluated in a similar manner—or against the cost of renewable resources rather than traditional avoided costs?
- From a pure economics perspective, if the intent of RPS and EE legislation is to ensure a certain percentage of energy comes from these clean resources, then screening of EE resources against traditional avoided costs results in a sub-optimal mix of EE and renewable resources

Inefficient Allocation of Energy Efficiency Resources within a Combined Renewables-EE Portfolio



Thank You!

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Natural Gas Energy Efficiency in Ontario
Enbridge Gas Distribution

Andrew Mandyam

July 30, 2012

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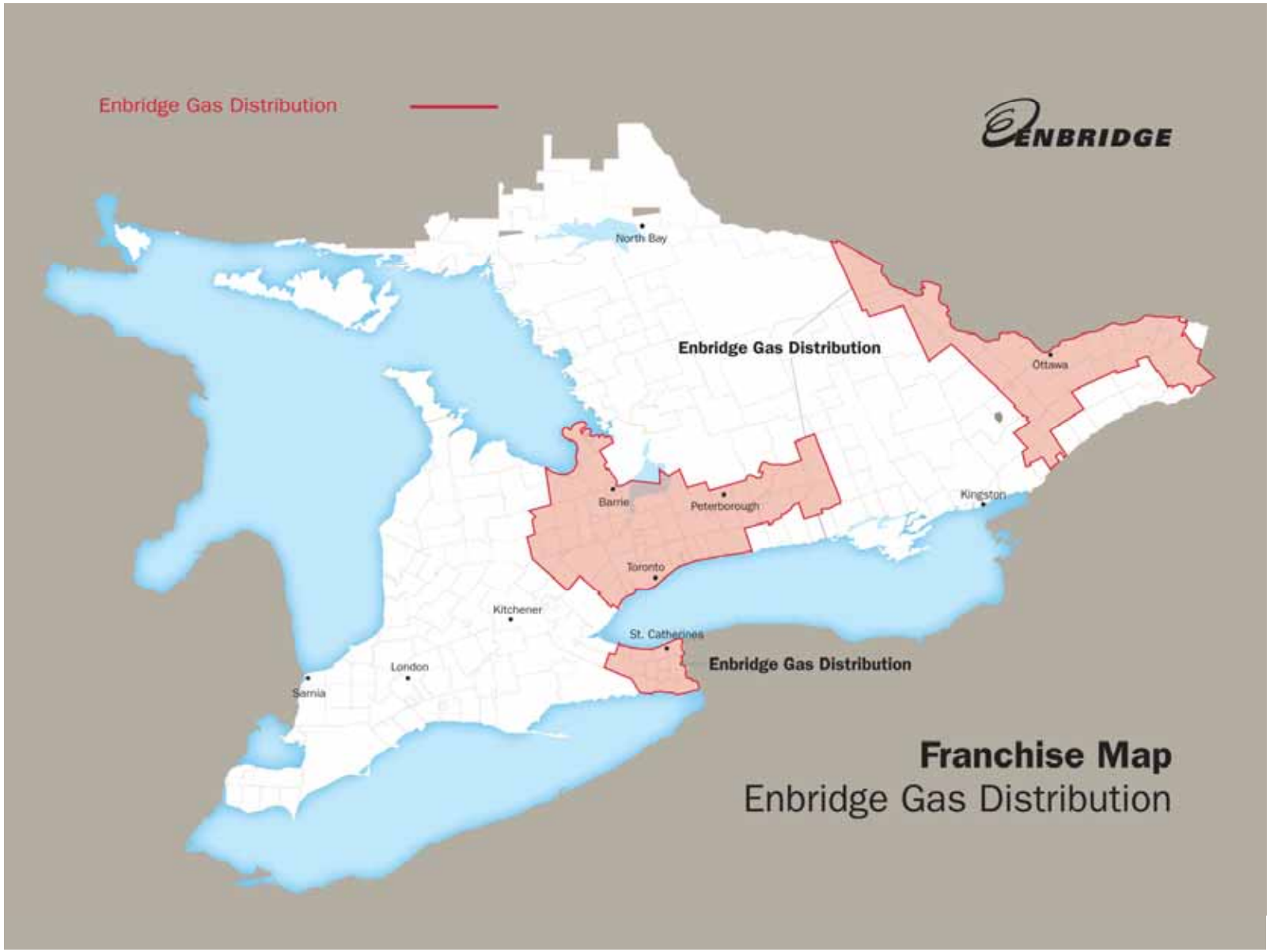

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Regulation and Policies

2006

- DSM Generic Framework
  - TRC: Screening and annual performance target
  - Focus on higher savings to cost ratio offerings
  - Residential offerings diminish: TRC ratios
  - Decline in Large Industrial customer base
  - Electricity conservation “kicks off”
  - Urbanization of GTA
  - OEB policy discussion evaluates SCT

2012

- Next Generation DSM Framework
  - TRC for screening customer offerings
  - Scorecards used for performance incentive
  - SCT not implemented and no valuation for GHG
  - Budget kept flat
  - Natural Gas commodity price at low point
  - Stakeholder consultative achieves settlement
  - Common Technical Evaluation Committee
  - Deemed savings vs. Measurement and Verification

2014

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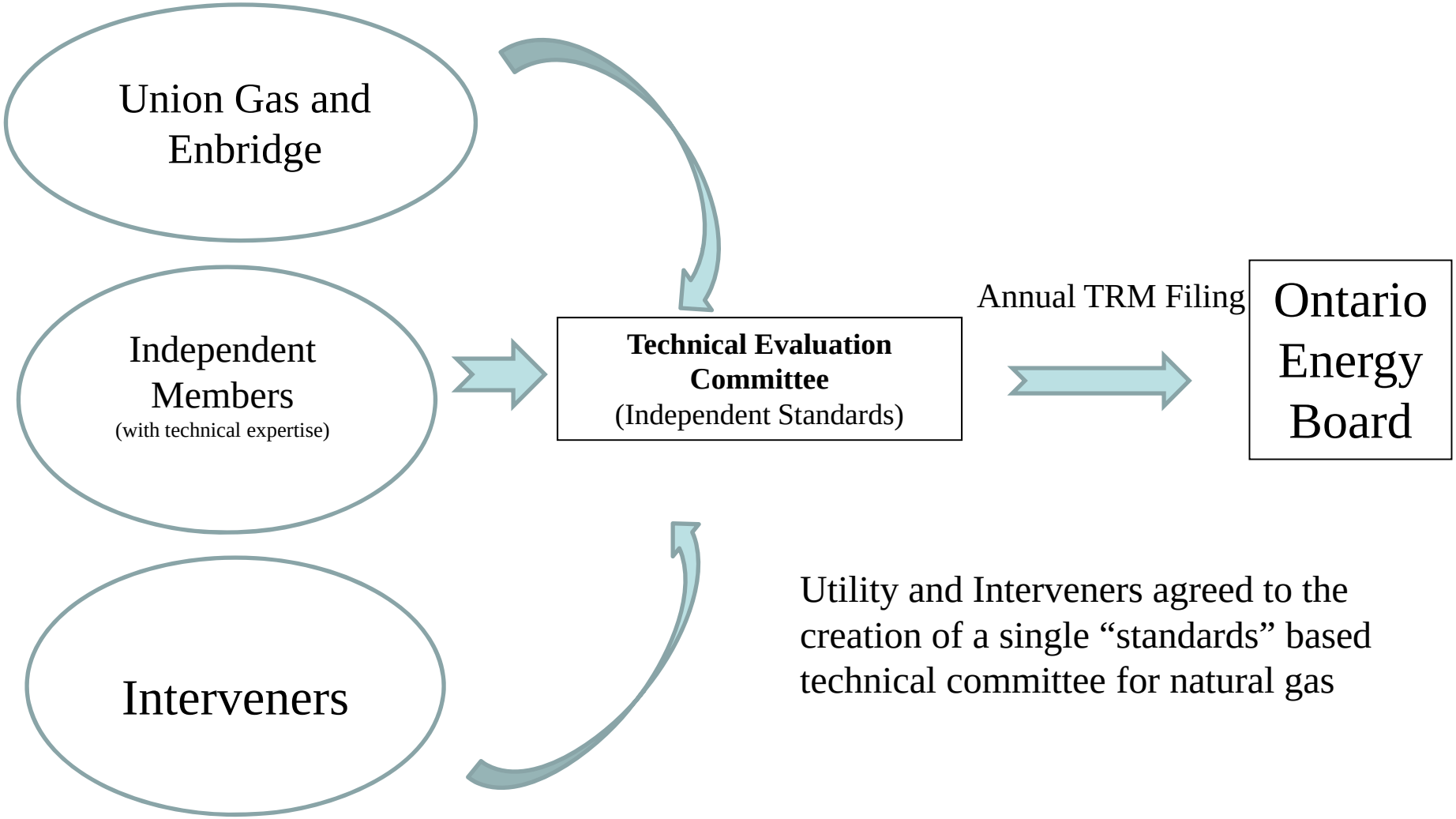
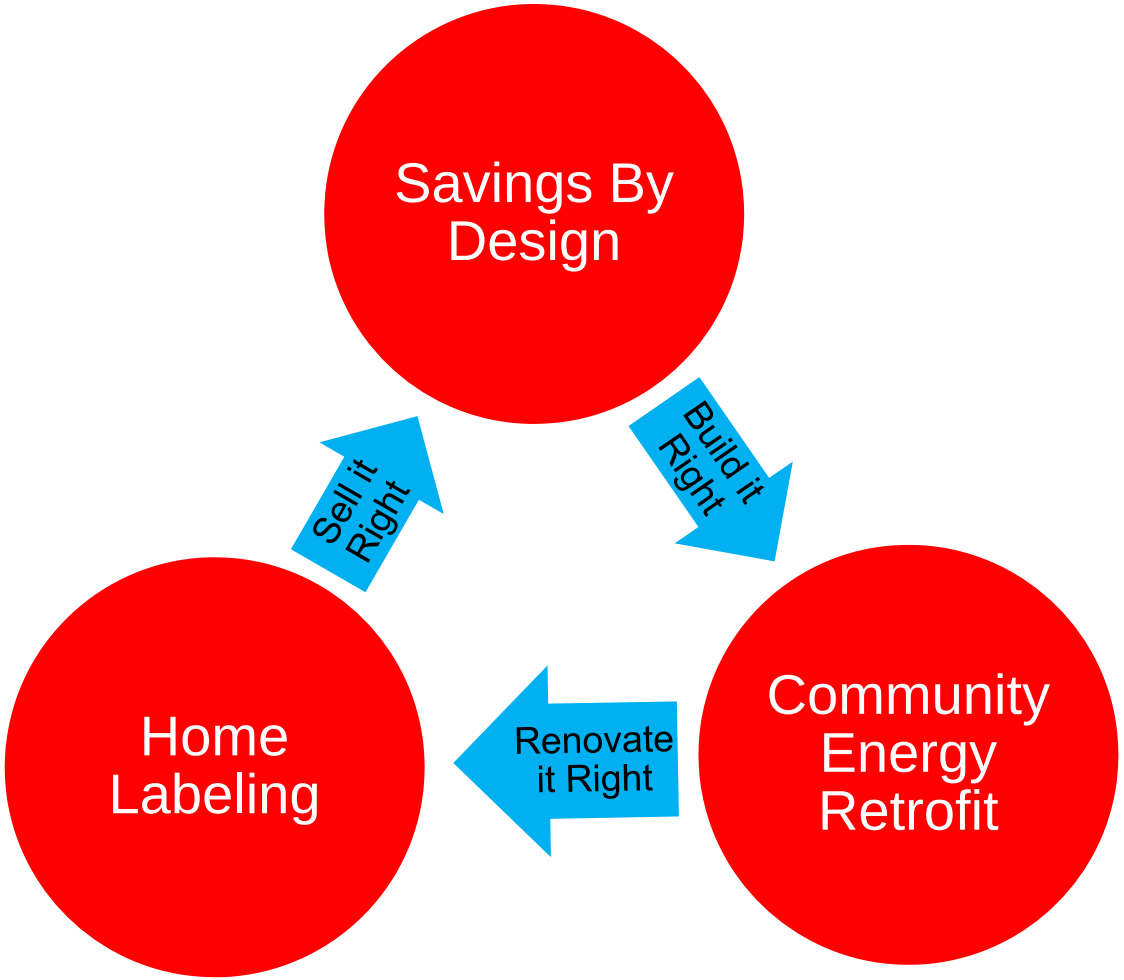
2012 – 2014: DSM Stakeholder Model



Utility and Interveners agreed to the creation of a single “standards” based technical committee for natural gas

Residential Energy Efficiency: Push and Pull

- Resource acquisition and Market Transformation

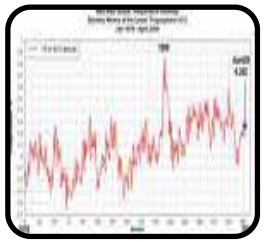


2012 – 2014: Run it Right

Meter Upgrades

- Daily / hourly monitoring & tracking

Data Analysis



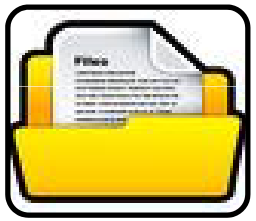
- Measure actual savings

Implementation

- Building energy assessment
- Behavior changes / rewards

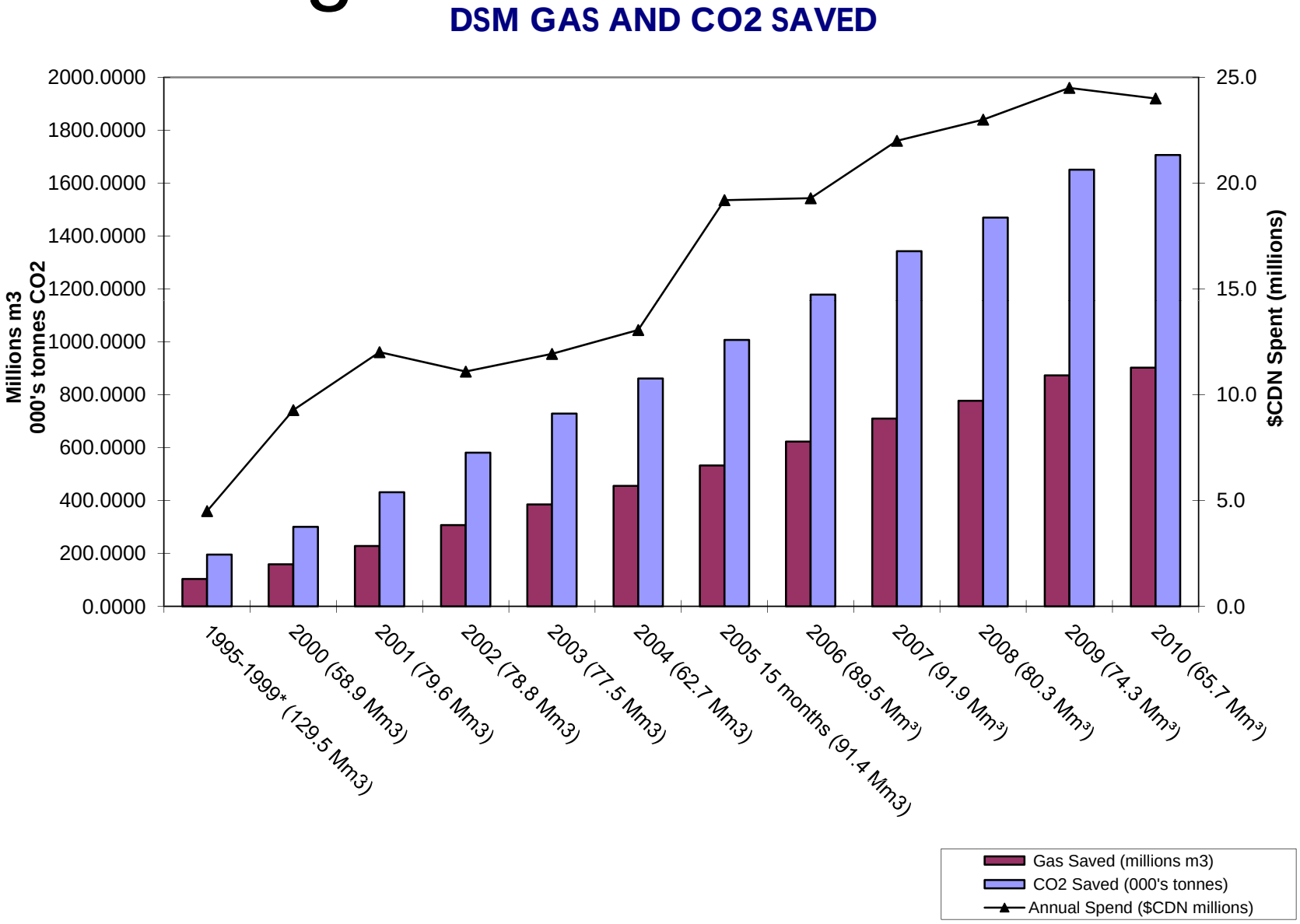
Deep (monitored & persistent) Savings

Customized Saving Reports



Customized Operator Training

Enbridge and DSM – Results



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Totally Radically Cool

A new approach to TRC

Sarah Smith, FortisBC Energy Utilities

July 30, 2012

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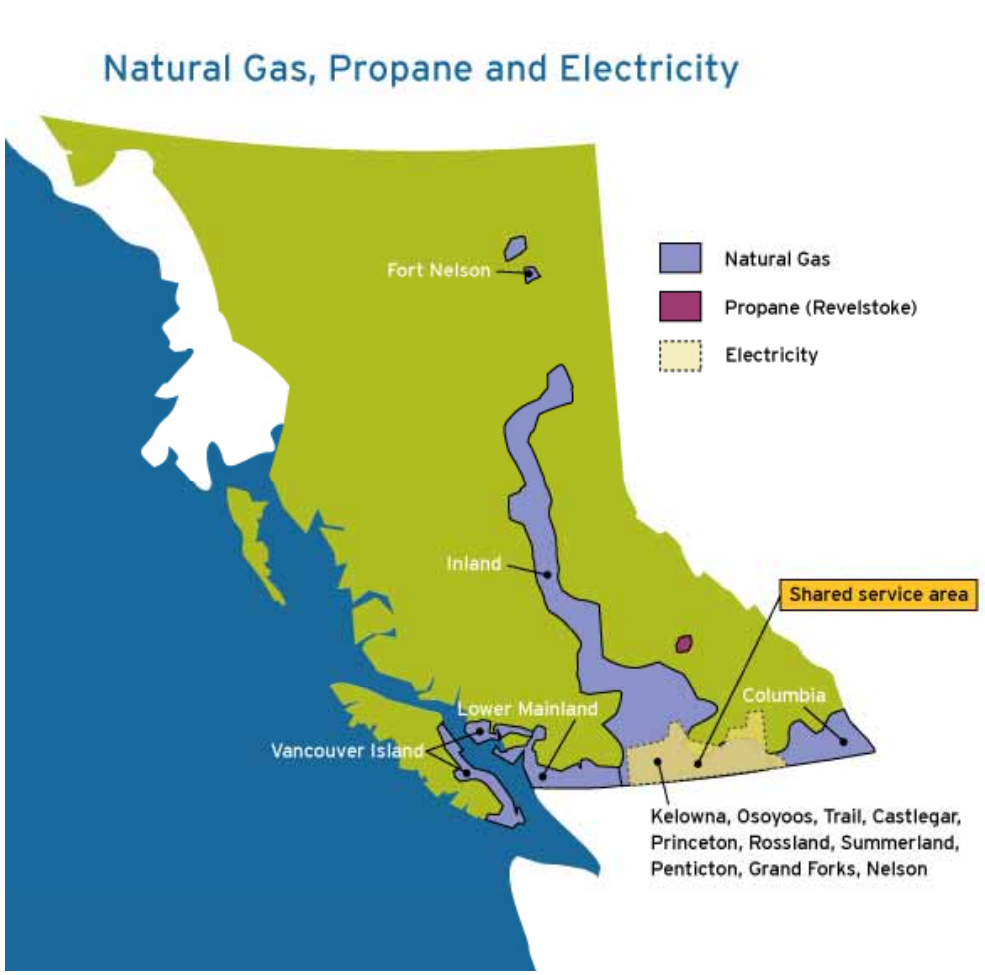
FBC Companies



- FEU gas
  - 862,000 Residential
  - 93,000 Commercial
  - 900 Industrial
- FBC electric
  - 142,000 Residential
  - 16,500 Commercial
  - 50 Industrial
  - 4,000 Other

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Current Regulation and Policies

2007

- BC Energy Plan
- *Greenhouse Gas Reductions Targets Act*
  - 33% below 2007 level by 2020
  - 80% below 2007 level by 2050
- *BC Climate Action Charter*
  - Carbon neutral government by 2012
- *Carbon Tax Act*
  - $30 per tonne as of July 1, 2012
- *Clean Energy Act*
- Amendments to the *Utilities Commission Act*
  - *Amendments to DSM Regulation*
- New Natural Gas Strategy

2012

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Operating Environment

FORTIS BC™

BC hydro
powersmart

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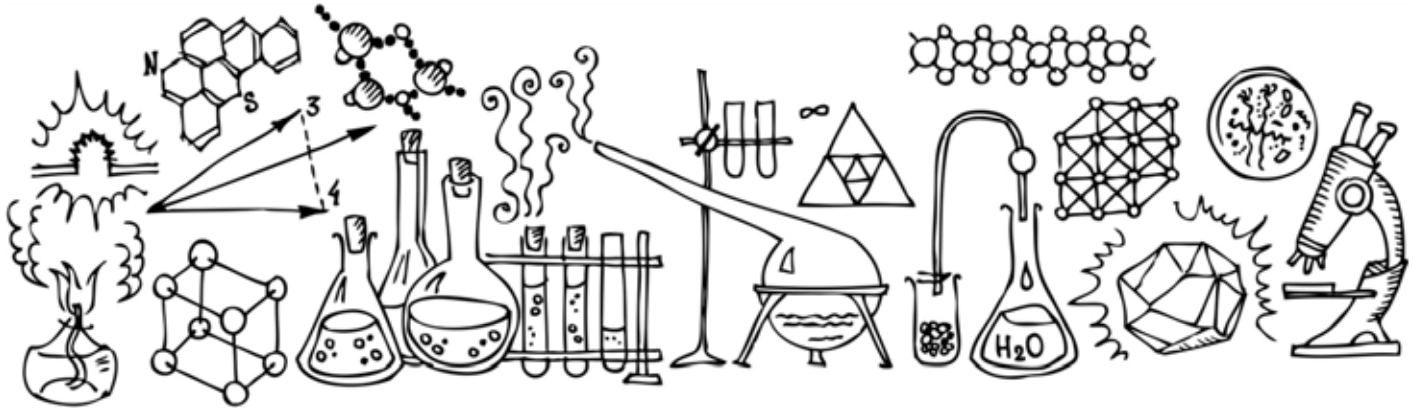
Societal Cost Test

- 3% discount rate
- 30% deemed adder for NEBs
- Ceiling price of biomethane – about $16/GJ



MTRC

- ZEEA
- 15% NEBs adder
- 33% of gas portfolio; 10% of electric

Back in Business!

Program Name	Budget ($000's)		%age of total budget		Benefit/Cost Ratios			
	2012	2013	2012	2013	TRC	MTRC	UCT	SCT
ENERGY STAR® DHW	1,786	1,786	6.01%	4.93%	0.50	1.13	1.23	1.27
ENERGY STAR® Washers	525	525	1.77%	1.45%	0.94	2.03	4.44	2.25
Behaviour Tool	500	1,050	1.68%	2.90%	0.69	1.67	0.69	1.58
EGH 80/EE Appliances NC	945	945	3.18%	2.61%	0.45	1.01	1.89	1.20
ECAP	4,450	4,450	14.98%	12.29%	0.38	0.75	0.28	0.71
Catalytic Radiant Burner	53	313	n/a	n/a	0.79	1.78	1.36	1.89
Furnace Scrap-It	2,000	2,000	3.10%	5.52%	0.59	0.95	0.82	1.25
TOTAL	**10,258**	**11,068**	**34.53%**	**30.57%**	**0.39**	**1.31**	**2.49**	**1.29**

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