DTE Energy®

Integrating Energy Efficiency into the Integrated Resource Plan

"Presented at the 2015 ACEEE National Conference on Energy Efficiency as a Resource"

September 22, 2015

Agenda

- DTE Energy Overview
- Purpose and Background
- Assumptions
- Methodology
- Key Takeaways

DTE Energy Overview

DTE Energy

- DTE Energy Co. is a diversified energy company involved in the development and management of energy-related businesses and services nationwide
- Our largest operating regulated subsidiaries are DTE Electric and DTE Gas
- Approx. $12B revenue, $28B assets

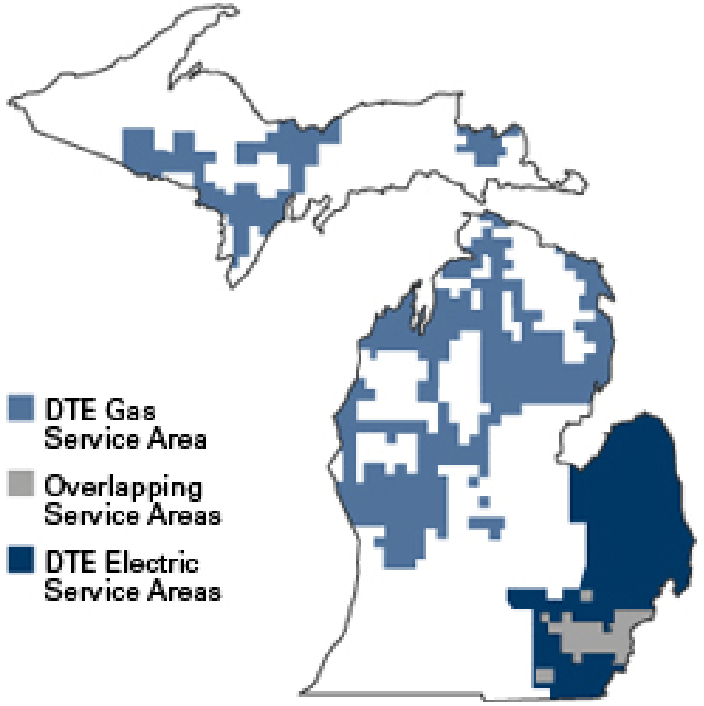
DTE Electric

- Largest electric utility in Michigan and one of the largest in the nation with 2.1M customers

DTE Gas

- One of the largest US natural gas utility with 1.2 million customers

DTE Electric & Gas Service Territory



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Purpose and Background

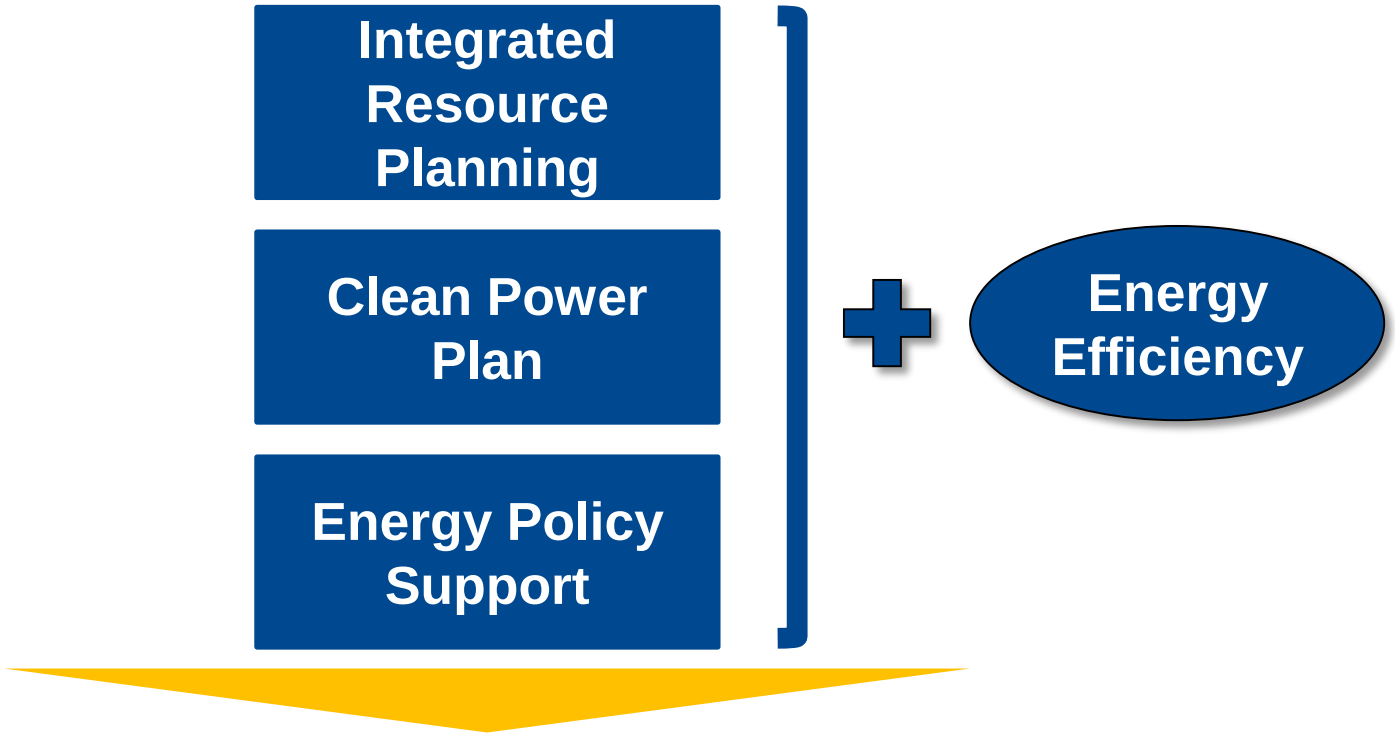
- The purpose of this presentation is to describe an approach to integrate energy efficiency (EE) into the utility Integrated Resource Planning (IRP) Process

- Being a low cost resource, Energy Efficiency (EE) is a key building block in the IRP planning process

- The presentation gives a perspective on how EE savings, costs and portfolio mix could be modeled based on available achievable EE potential savings in the utility service territory

- We continue to refine our study by incorporating best practices across the U.S.

Purpose and Background



Our goal is to achieve a comprehensive resource plan that addresses the key issues, mitigates customer impacts, meets regulatory / environmental requirements and is flexible to adjust under changing economic and regulatory environments

Purpose and Background

IRP Team	Renewables	Energy Efficiency
Corporate Strategy	Comprehensive Resource Plan	Corporate Energy Forecasting
Fossil Generation		Major Enterprise Projects
Fuel Supply	Environmental	Regulatory & Government Affairs

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Assumptions

1. Data Source:
   - Achievable potential (UCT) savings data from the Michigan EE potential study conducted by GDS Associates Inc. (GDS) in 2013
   - DTE Savings and Spend data obtained from plan filings

2. Time Frame:
   - GDS study reports potential savings over two time periods:
     - ✓ 5-year period from January 1, 2014 - December 31, 2018
     - ✓ 10-year period from January 1, 2014 - December 31, 2023
   - Start year selected as 2014; end year selected as 2030
   - Since GDS data was only available through 2023, the potential beyond years 2023 was estimated based on the growth assumptions of individual end use applications

Assumptions

3. Allocation of EE Potential:
   - DTE Energy EE potential estimated at 47% of Michigan EE potential
   - GDS study reports potential savings by end use application, whereas DTE Energy records savings and spend by program. This was reconciled by allocating the GDS potential savings to DTE programs appropriately based on the type of end use application
     - ✓ e.g. savings from the Lighting and Electronics from the GDS study was allocated to DTE's Energy Star Program

4. Other Assumptions:
   - Program savings calculated as a percentage of future sales forecast
   - Historical EE actual program cost data was used to model future program cost increases

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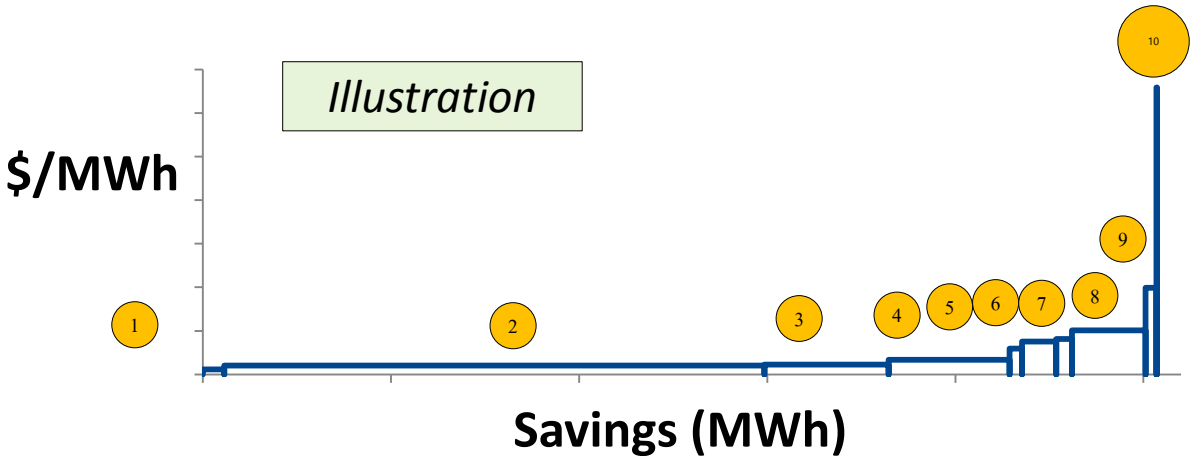
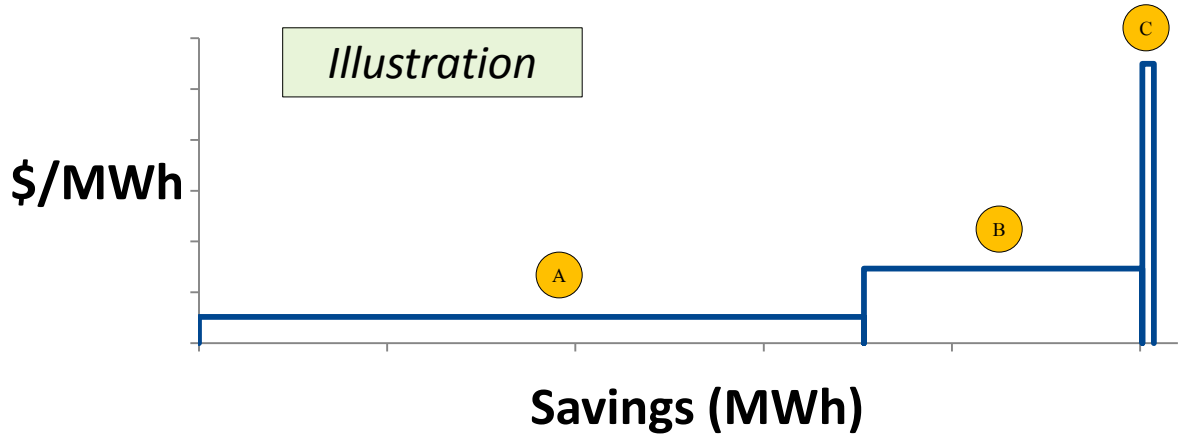
Step 1: Aggregate Program Portfolio

4. Program Aggregation: Residential Categories

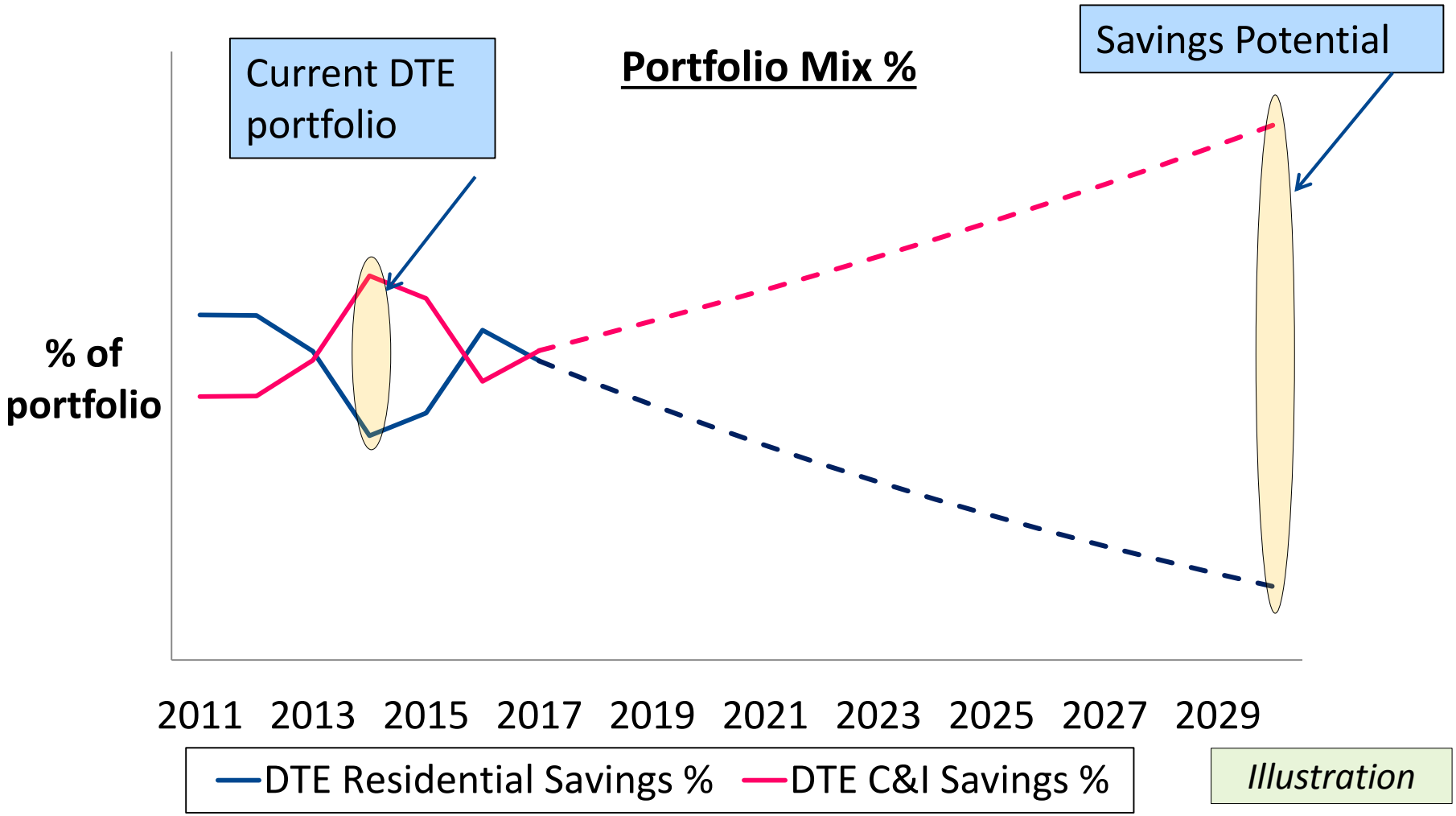


1. On-Line Energy Audit
2. Residential ENERGY STAR
3. Behavior Programs
4. Appliance Recycling
5. School Program
6. Home Energy Consultation
7. Multifamily
8. Low Income
9. HVAC
10. Audit and Weatherization

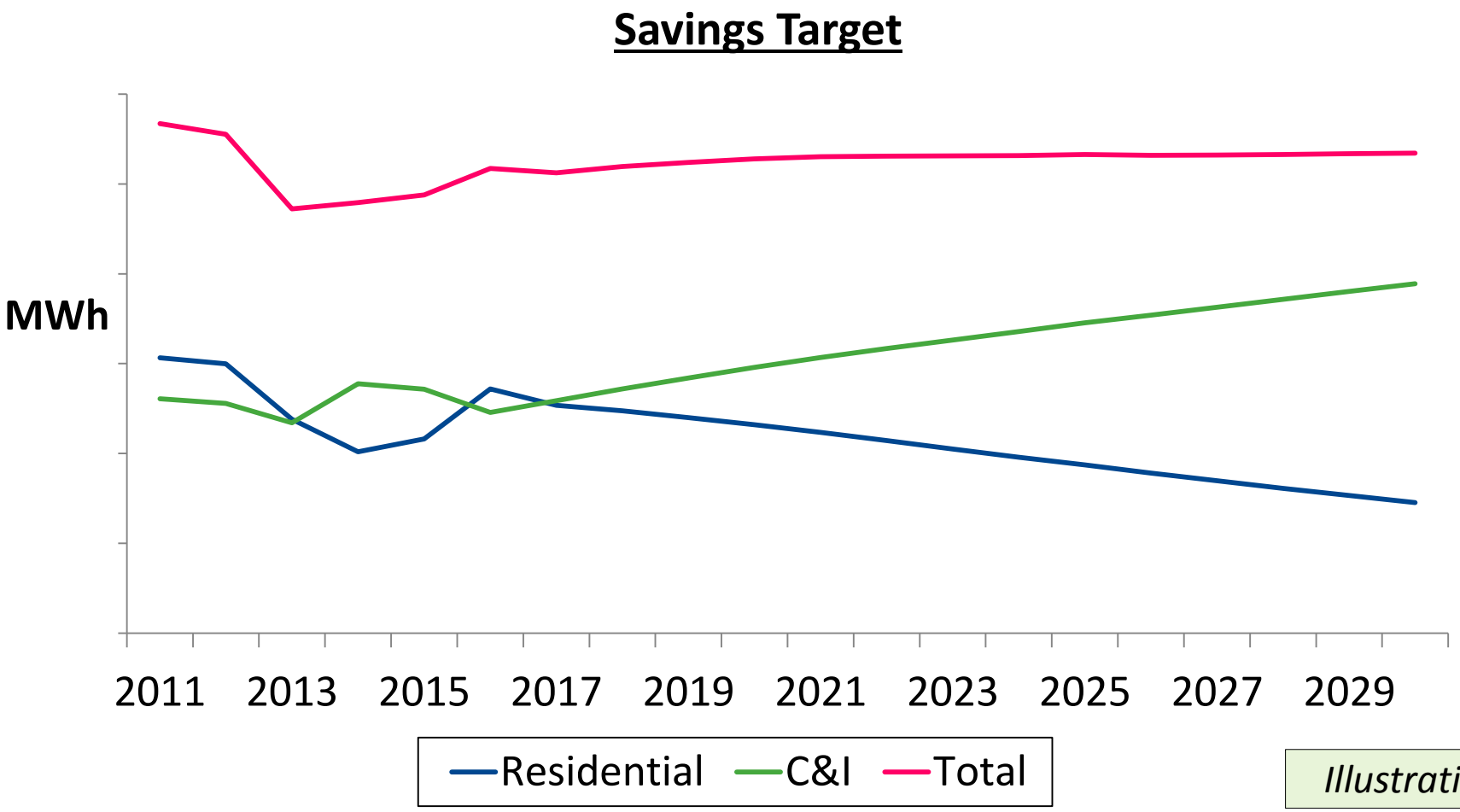


A. Low Cost - High Potential
B. Mid Cost - Mid Potential
C. High Cost - Low Potential

Step 2: Determine Future Program Mix

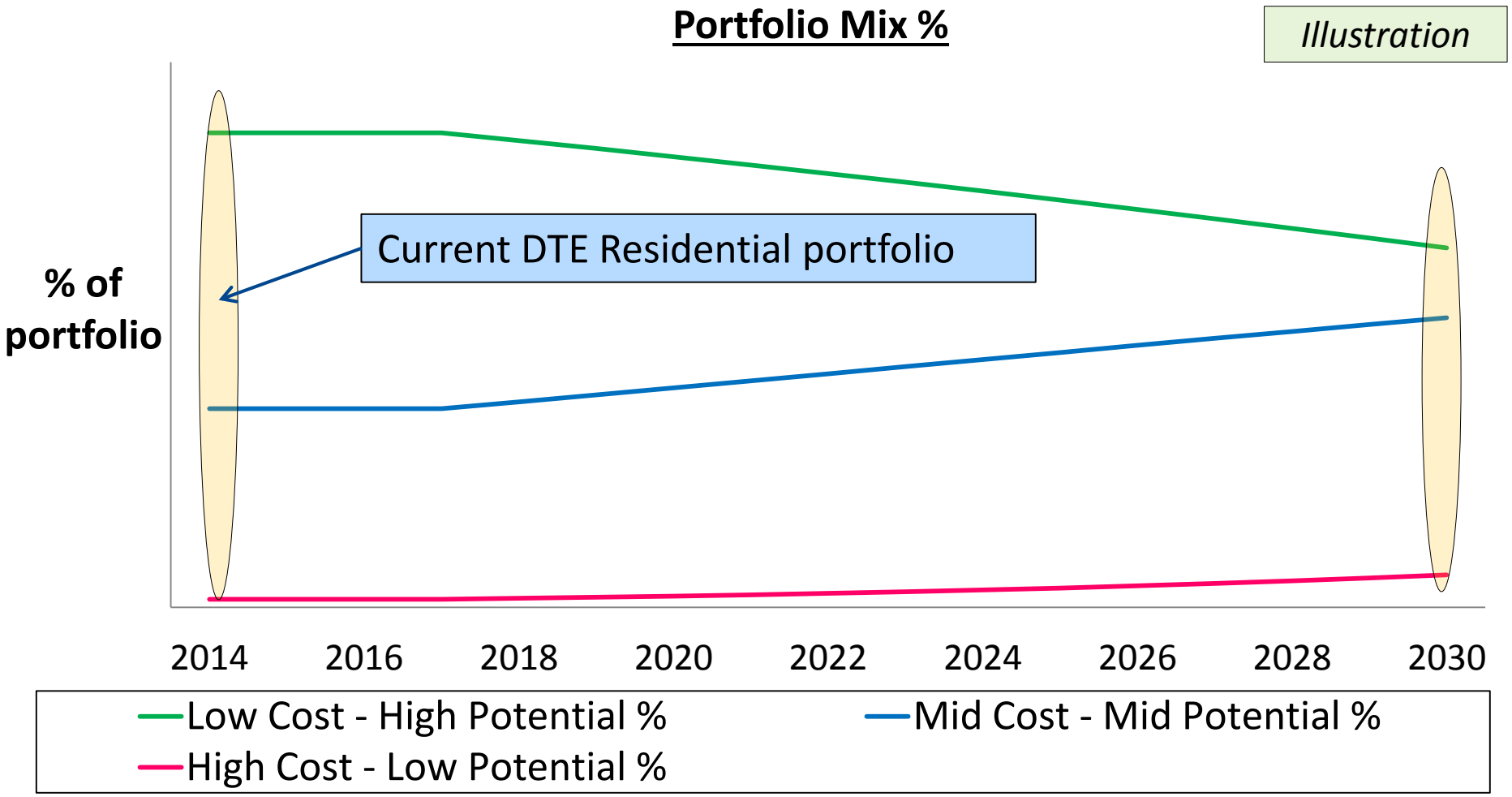


Step 3: Determine Future Savings Target

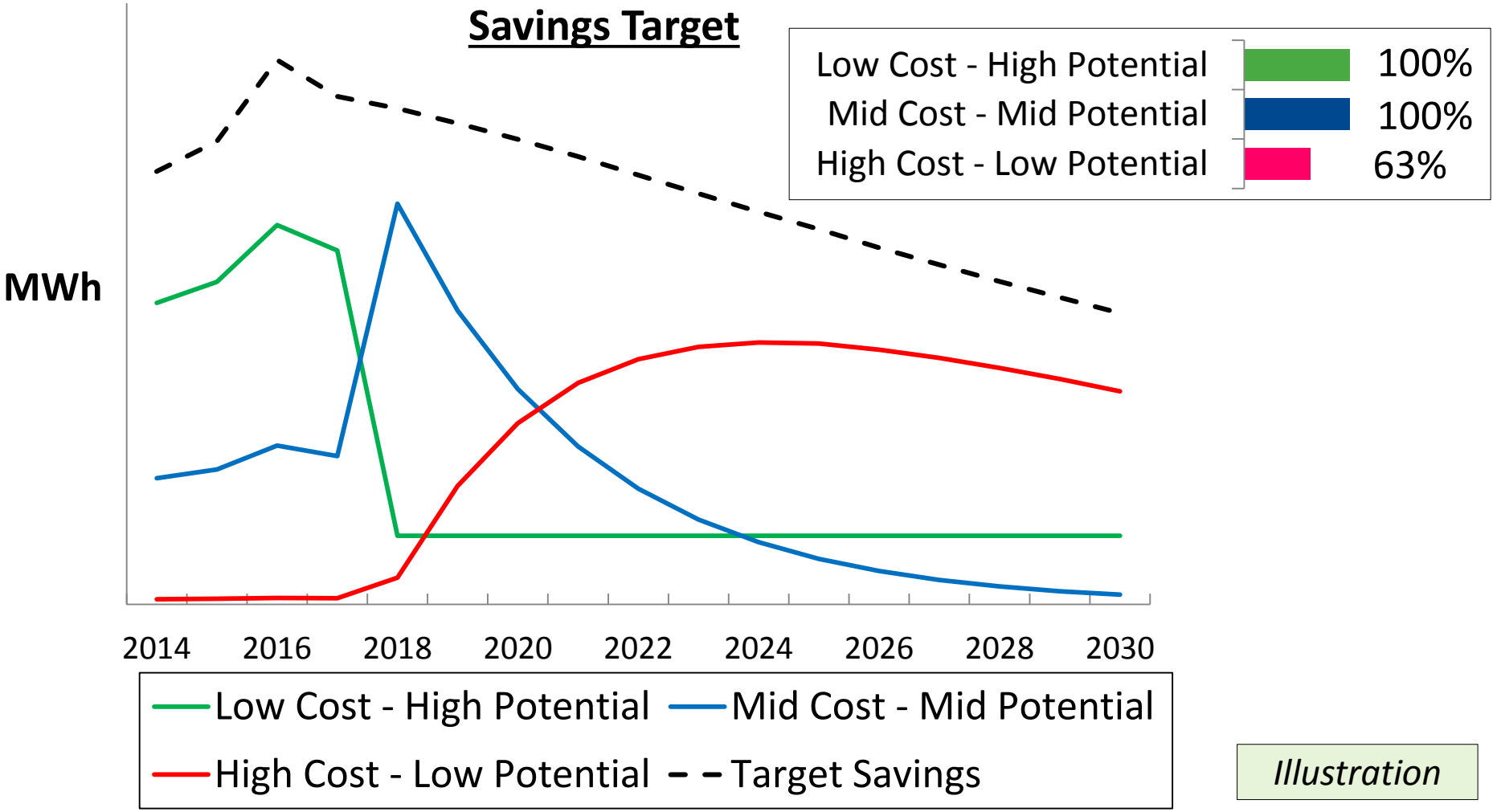


Illustration

Step 4: Allocate aggregated programs based on growth assumptions in potential study

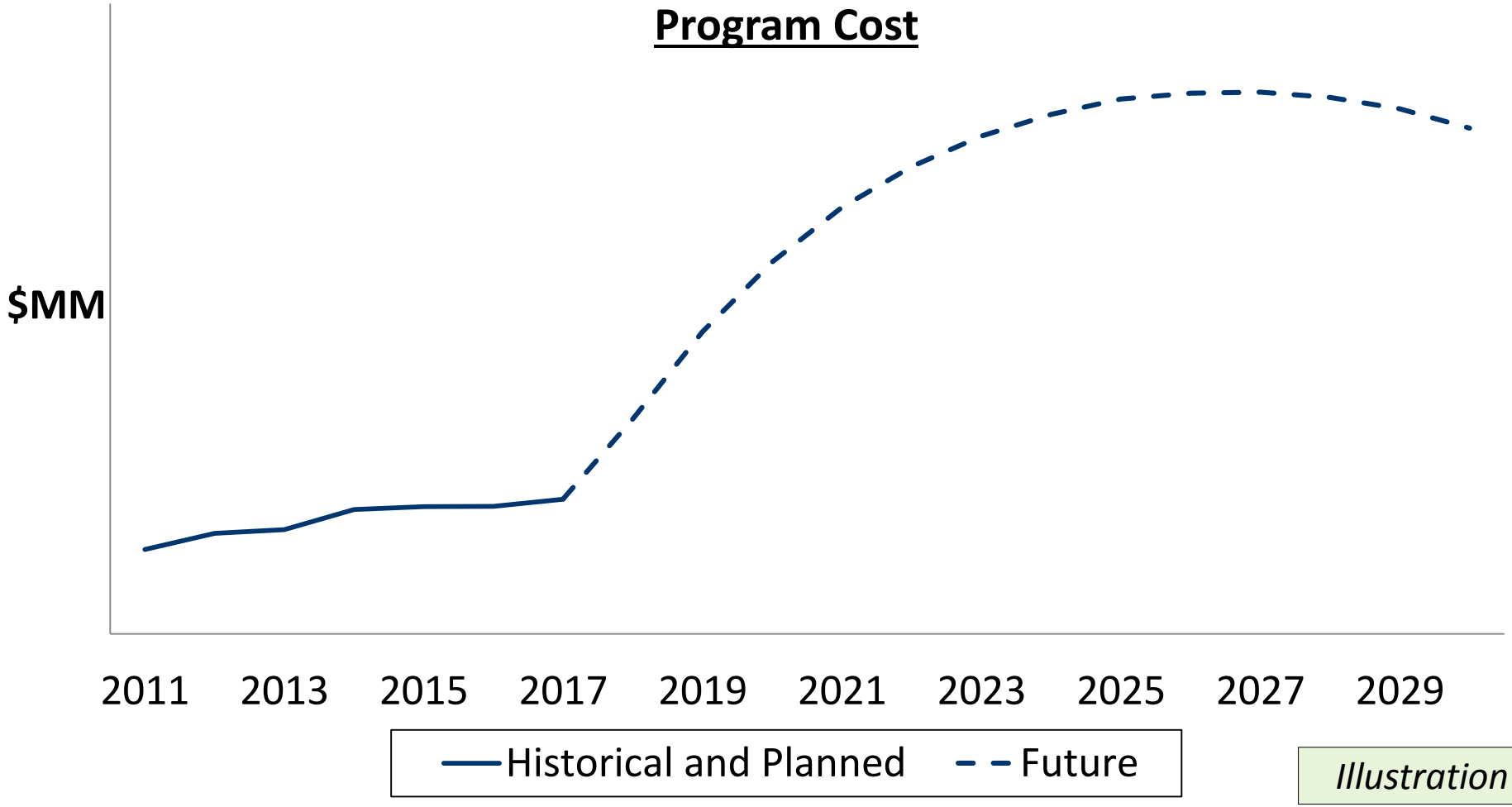


Step 5: Maximize available savings potential

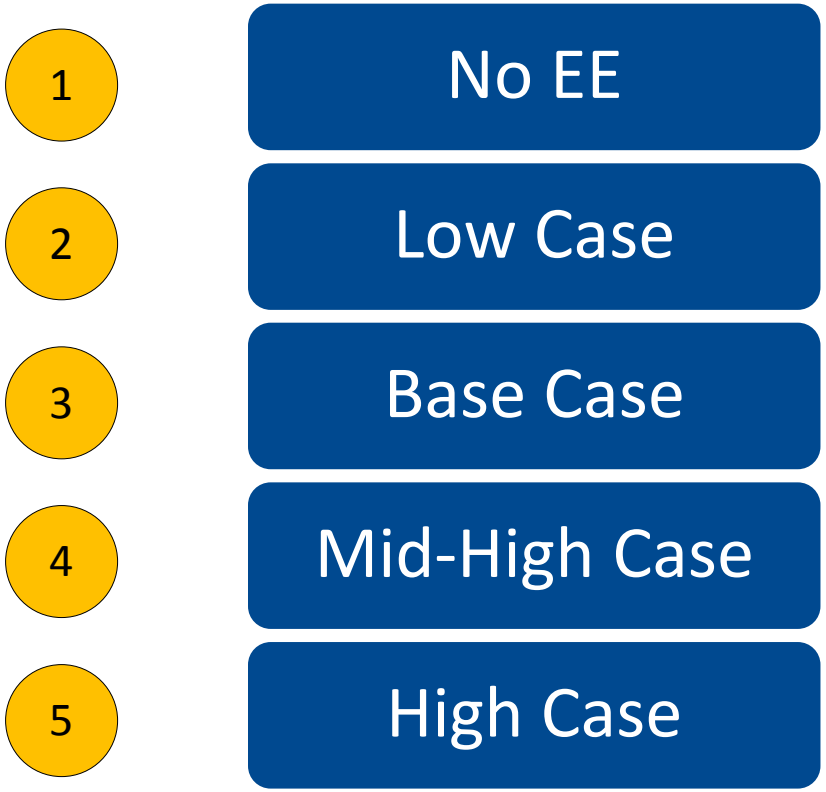


Illustration

Step 6: Model Future Program Costs

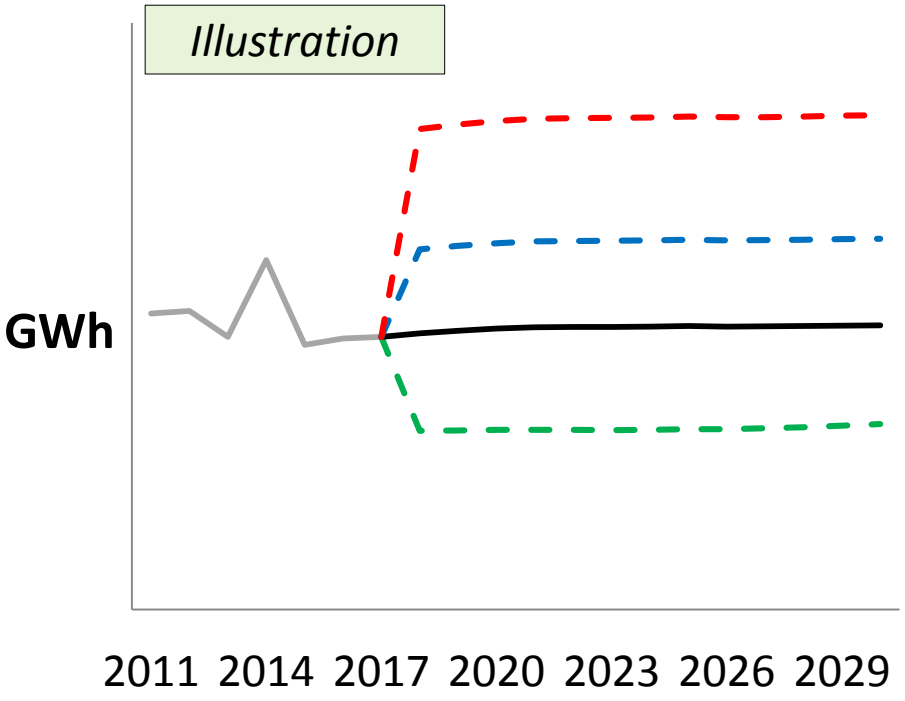


Step 7: Repeat process by running scenarios

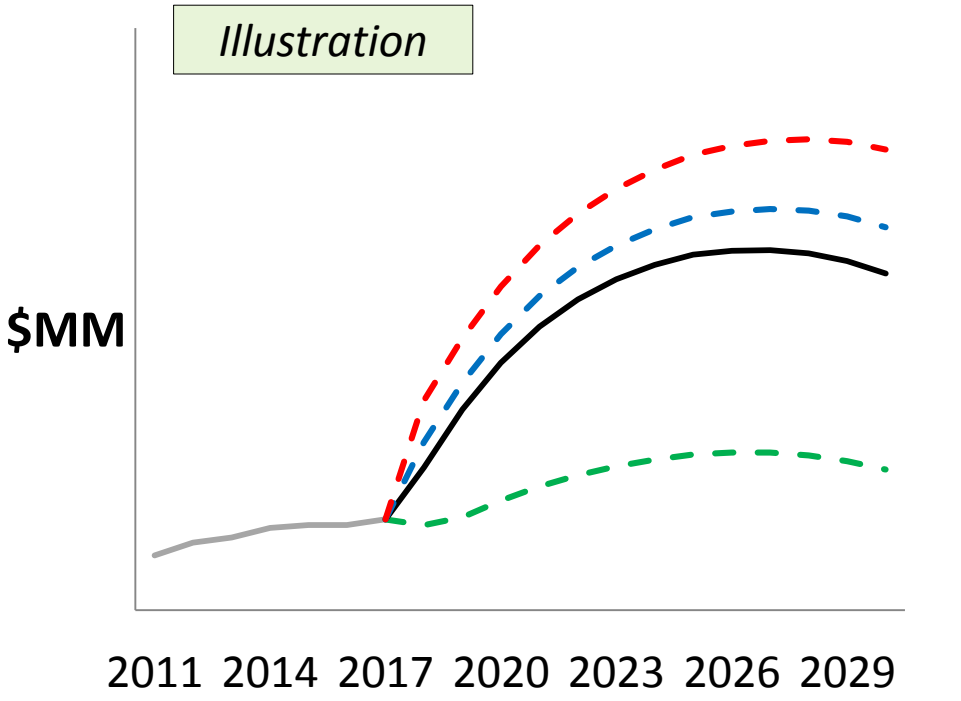


Step 7: Repeat process by running scenarios

Energy Savings

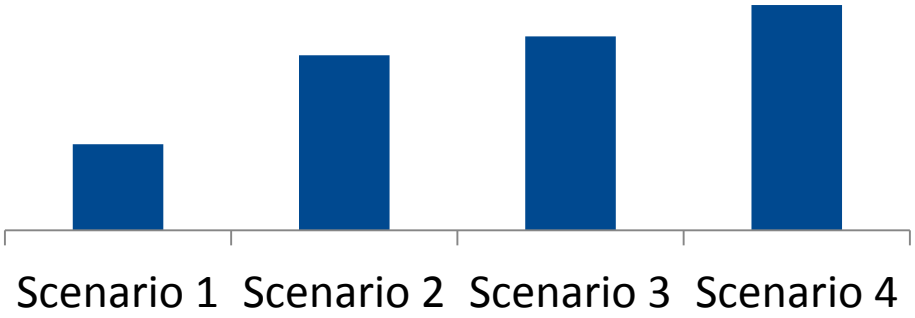


Program Costs

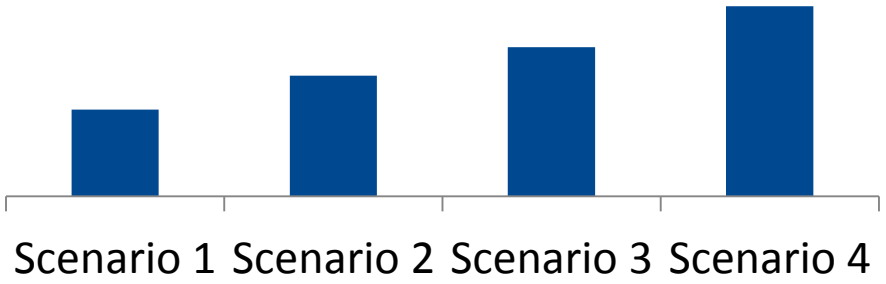


Step 8: Compare the scenarios

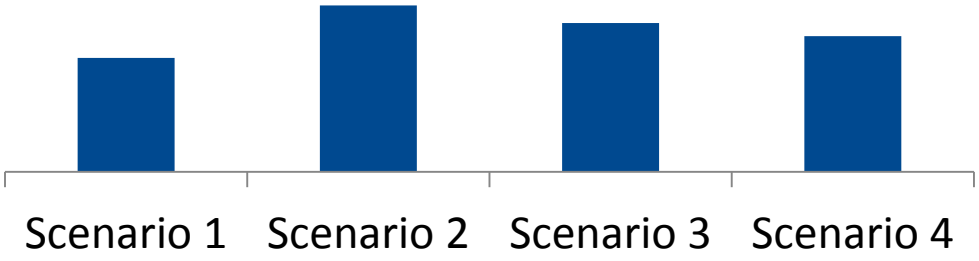
Levelized First Year Savings



Levelized Cost

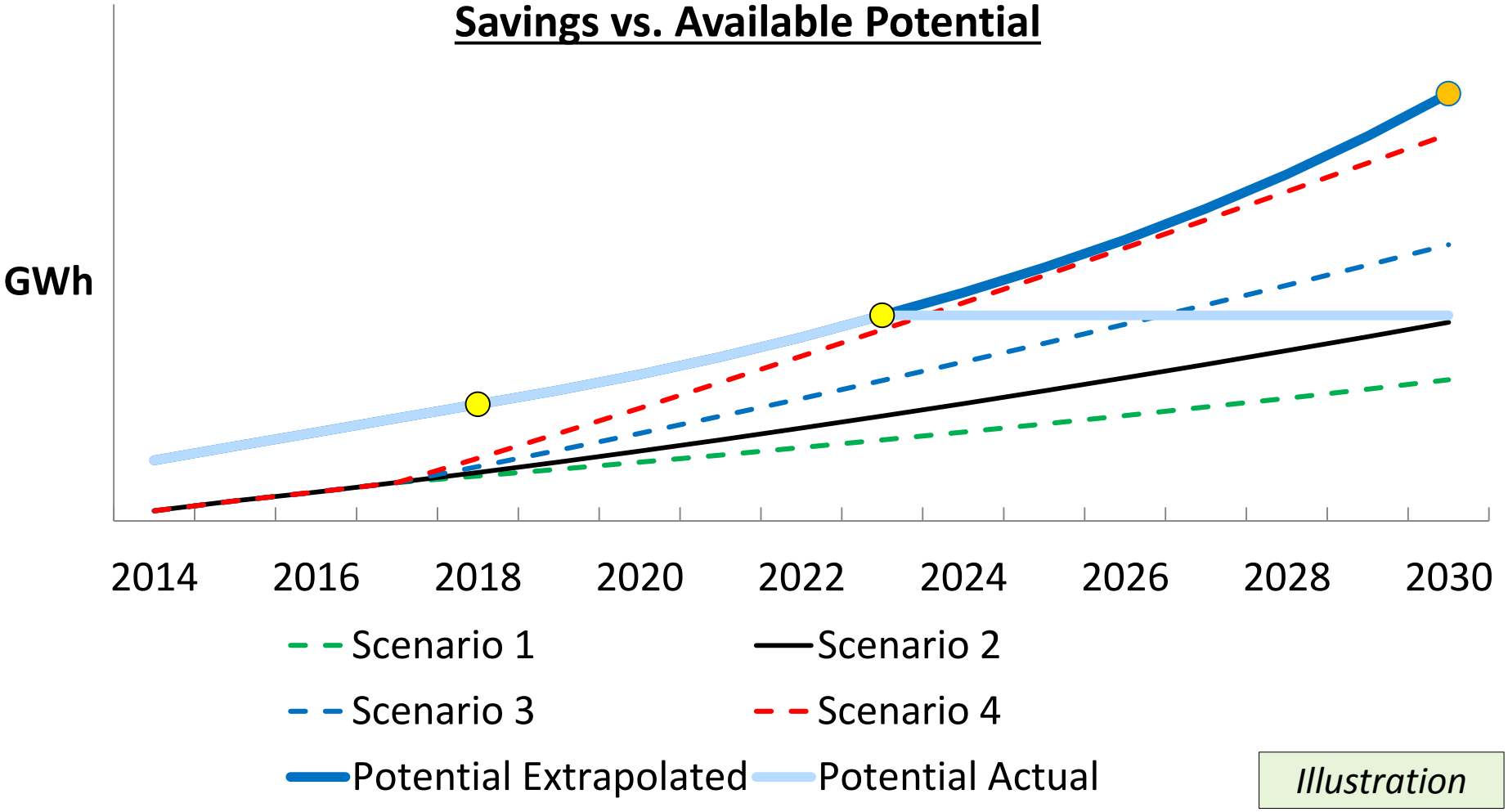


Levelized Cost per First Year Savings ($/MWh)

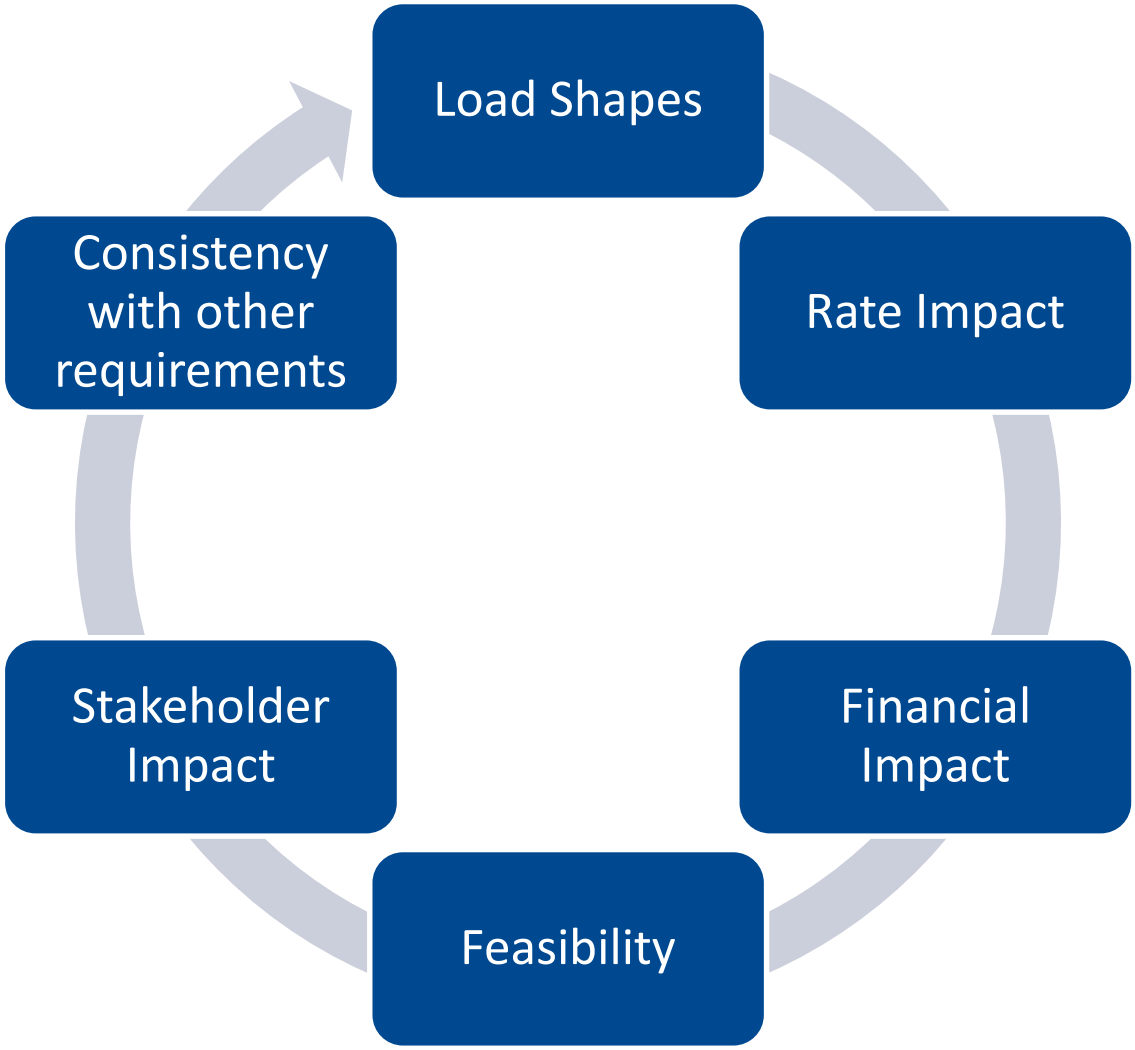


Illustration

Step 9: Verify Feasibility



Step 10: Determine Best Scenario



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Key Takeaways

Below are some best practices that we learnt from this study:

- Aggregate EE programs into “tranches”
- Benchmark EE costs and review historical utility EE costs
- Run scenarios and sensitivities
- Determine feasibility via potential study
- Use the right tools to model data
- Assess financial, customer and stakeholder impact
- This is a team effort!