



**INTERMOUNTAIN<sup>®</sup>**

**GAS COMPANY**

*A Subsidiary of MDU Resources Group, Inc.*

## INTEGRATED RESOURCE PLAN

JUNE 8, 2023

INTERMOUNTAIN GAS RESOURCE ADVISORY COMMITTEE (IGRAC)

# WELCOME

- Introductions
- Feedback Process
- Agenda

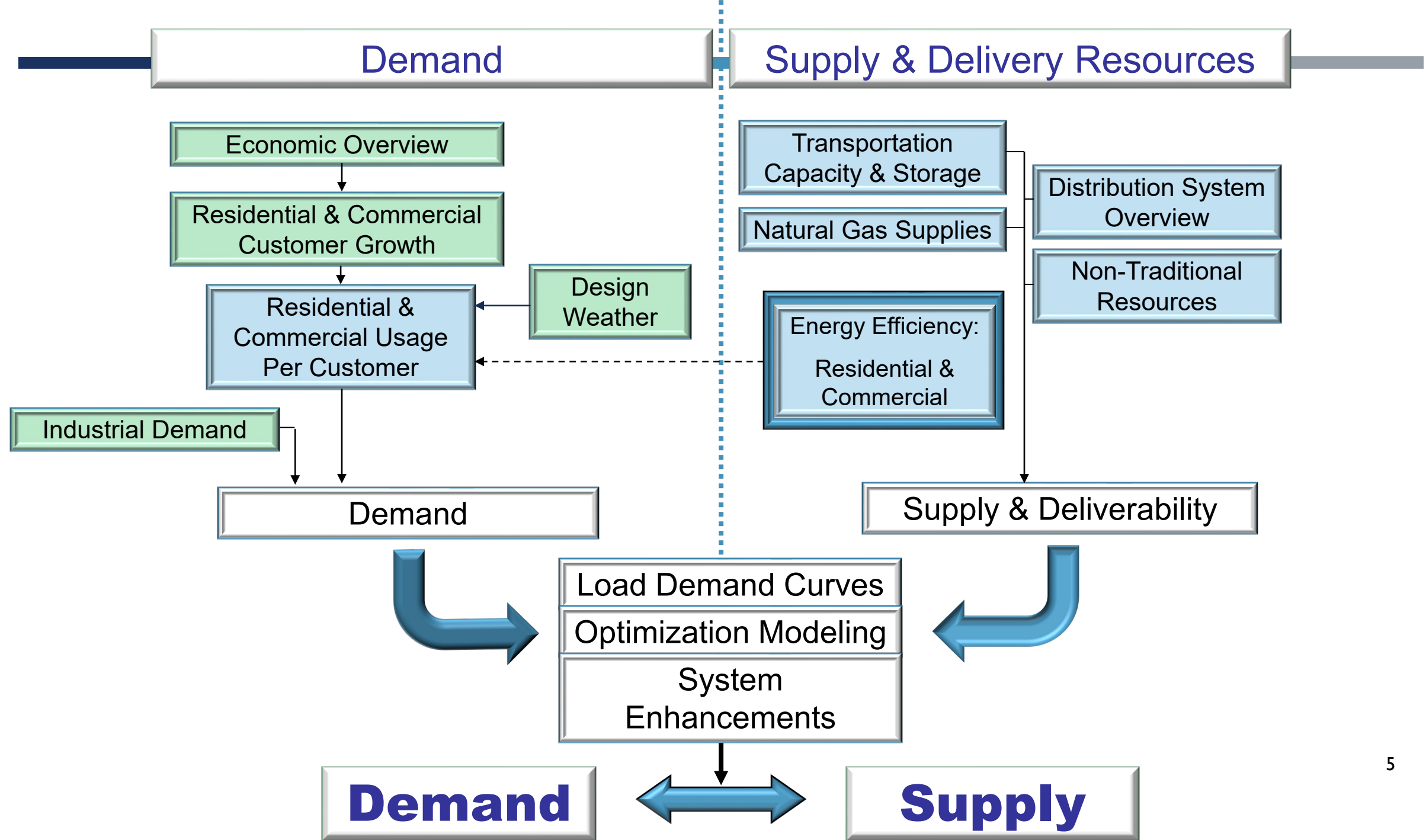
# FEEDBACK SUBMISSIONS



- [IRP.Comments@intgas.com](mailto:IRP.Comments@intgas.com)
- Please provide comments and feedback within 10 days

# AGENDA

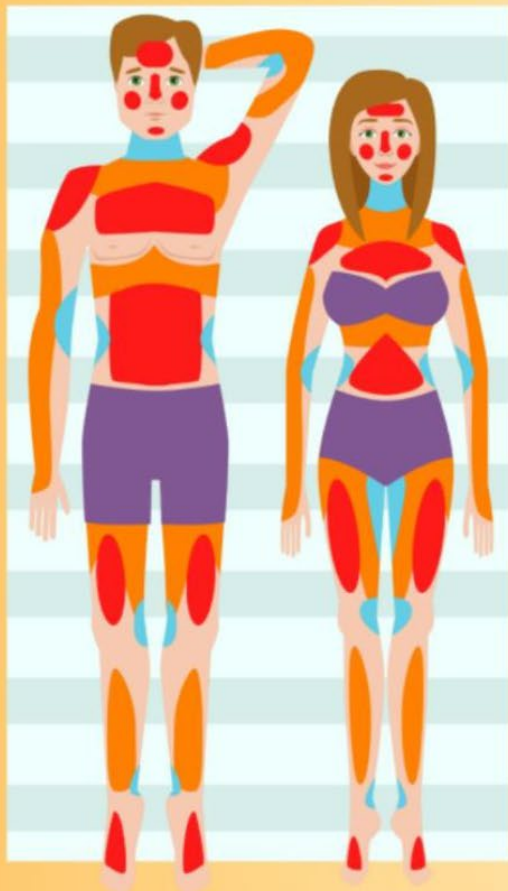
- **Welcome & Introductions** – Mark Sellers-Vaughn (*Manager, Supply Resource Planning*)
- **Safety Moment** – Jenny De Boer (*Resource Planning Economist I*)
- **Distribution System Modeling** – Kathleen Campbell (*Senior Engineer*)
- **Avoided Cost Methodology** – Min Park (*Regulatory Analyst I*)
- **Energy Efficiency** – Kathy Wold (*Manager, Energy Efficiency*)
- **Supply Resources and Transportation & Storage Resources**  
– Eric Wood (*Supervisor, Gas Supply*), Devin McGreal (*Sr. Resource Planning Economist*)
- **Questions/Discussion**



# SAFETY MOMENT

## Places prone to sunburn

● Strongly burns ● Medium burns ● Slightly burns



## PROTECTION FROM THE SUN & HEAT

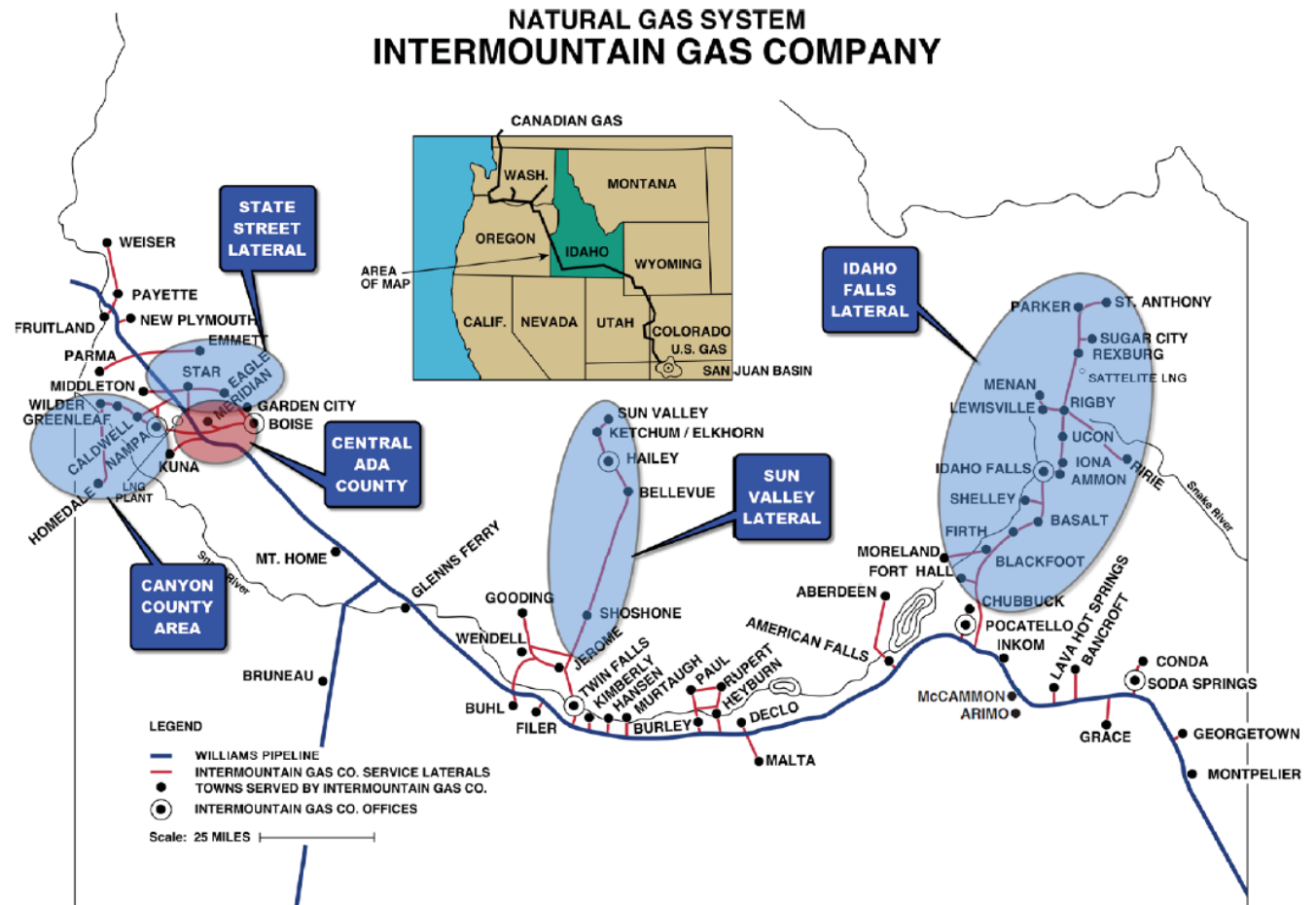
- **Wear a Hat and Sunglasses** – Besides skin damage the sun can damage your eyes; wear sunglasses with 100% UV protection.
- **Water** – Drinking water keeps your body hydrated in warm weather.
- **Sunscreen** – Use sunscreen with SPF 15 or higher. The higher the SPF, the better protection. Put it on every inch of exposed skin.
- **Time of Day** – The UV rays of the sun are strongest between 10am and 4pm. Try to limit sun exposure during this time of day; even on cloudy and cooler days.
- **Shade** – The simplest and an effective means of staying out of the sun is seeking shadows or shade.

Some people think about sun protection only when they spend a day at the lake, beach, or pool. Remember, sun exposure adds up day after day and every time you are in the sun.



# AREAS OF INTEREST (AOI)

- Distribution System Segments:
  - Canyon County
  - Central Ada County Lateral
  - “North of State Street” Lateral
  - Sun Valley Lateral
  - Idaho Falls Lateral
  - All Other Customers



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# DISTRIBUTION SYSTEM PLANNING

**KATHLEEN CAMPBELL, PE – SENIOR ENGINEER**  
**ZACHARY SOWARDS – ENGINEER III**

**IDAHO**  
**JUNE 8<sup>TH</sup>, 2023**



## SYSTEM DYNAMICS:

- Piping:
  - Diameter – 1/2” to 16”
  - Material – Polyethylene and Steel
  - Operating Pressure – 60 psi to 850 psi
  - Idaho – approx. 7,155 miles of distribution & 284 miles of transmission

# SYSTEM DYNAMIC'S CONT.

## ■ Facilities:

- Regulator stations – Over 600



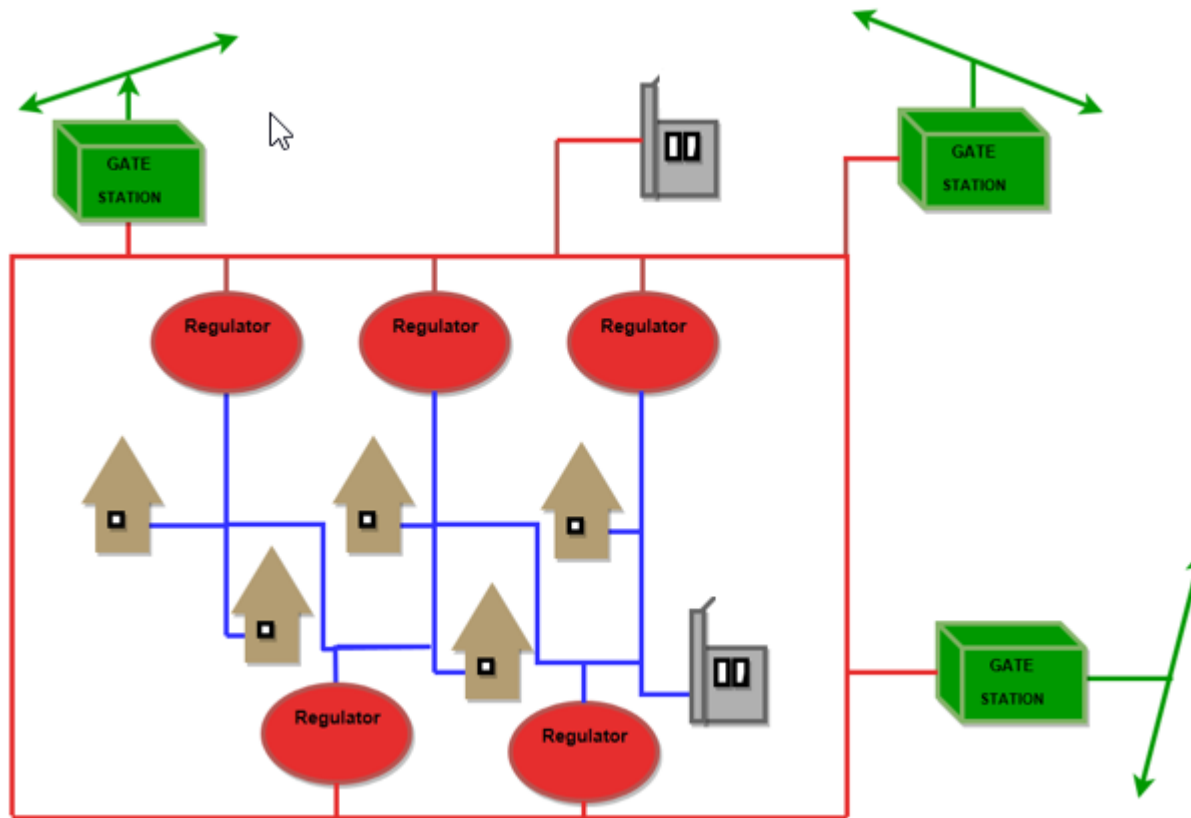
Equipment such



repressors



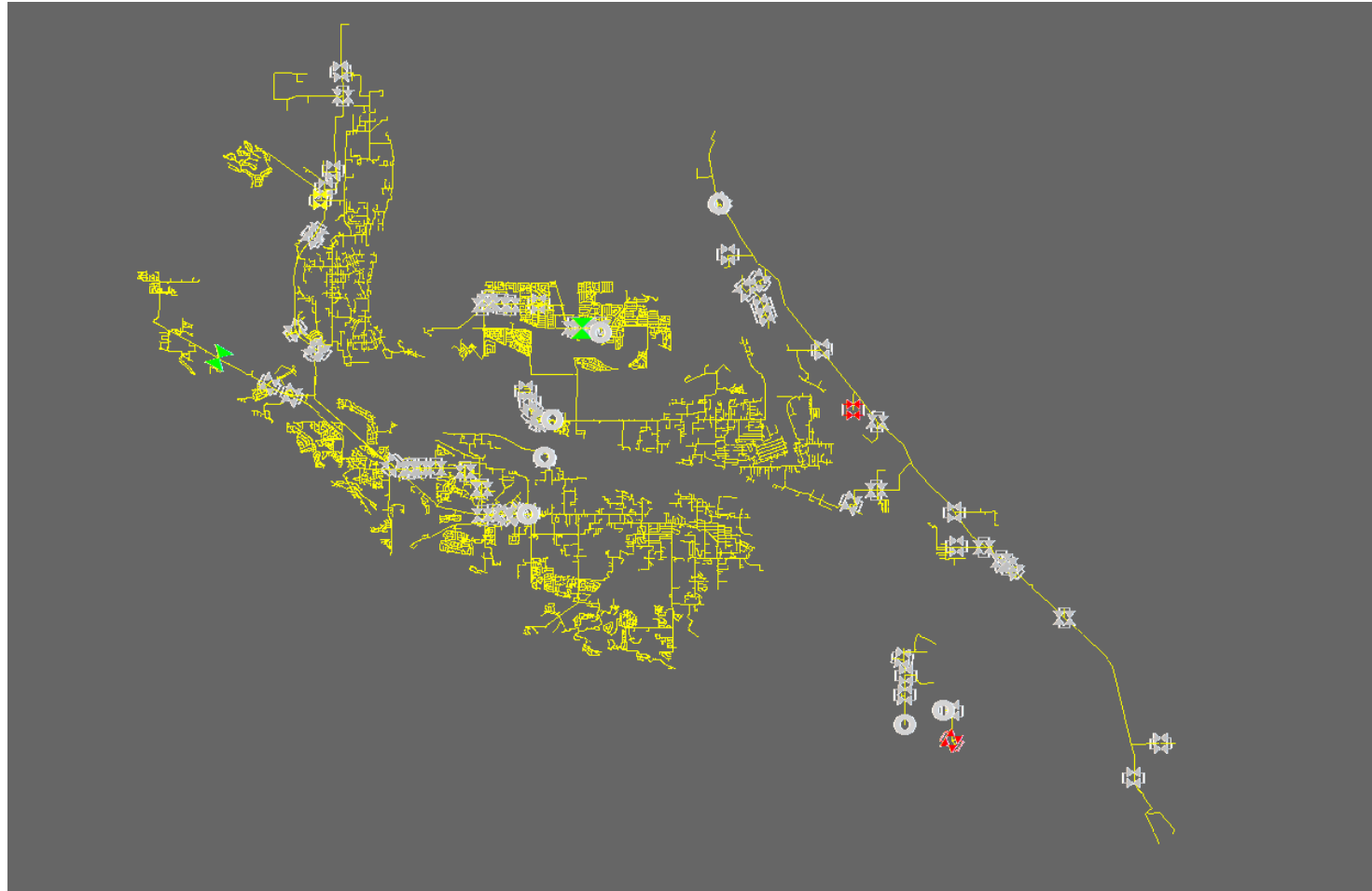
# SYSTEM DESIGN



# SYNERGI GAS MODELING

- To evaluate our systems for growth and potential future deficits we use our gas modeling software, Synergi Gas
- Distributed and supported by DNV
- Models incorporates:
  - Total customer loads
  - Existing pipe and system configurations
- Hydraulic modeling software that allows us to predict flows and pressures on our system based on gas demands predicted during a peak weather event.
- Models are updated every three years and maintained between rebuilds

# SYNERGI MODEL EXAMPLE



# MODEL BUILDING PROCESS

- Synergi models are completely rebuilt every three years and maintained/updated between rebuilds
- When models are rebuilt
  - We export current GIS data to build spatial model
  - We export 5 years of CC&B billing data to CMM to create an updated demands file
  - We validation and calibrate each district model to a recent low-pressure event using existing data (ERXs/pressure charts/SCADA/metertek/LV usage)
  - We create a design day model based on the updated heating degree day determined by gas supply (determined by trending historical weather events)
- IGC models were rebuilt in Fall of 2021

# DATA GATHERING

- CC&B (Customer Billing Data)

Oracle Utilities Customer Care and Billing V2.2.0 Control Central Thursday - November 13, 2014

PROD WebLogic

Main	Account Information	Customer Information	Account Tree	Premise Tree	Bill/Payment Tree	Pay Plan Tree			
01-24-2014	Pay Segment				\$6,788.52	\$0.00	\$6,788.52	\$0.00	\$6,788.52
01-06-2014	Bill Segment				\$6,788.52	\$6,788.52	\$6,788.52	\$6,788.52	\$6,788.52
12-20-2013	Pay Segment				\$-5,902.05	\$0.00	\$-5,902.05	\$0.00	\$-5,902.05
12-04-2013	Bill Segment				\$5,902.05	\$5,902.05	\$5,902.05	\$5,902.05	\$5,902.05
11-21-2013	Pay Segment				\$-5,171.56	\$0.00	\$-5,171.56	\$0.00	\$-5,171.56
11-05-2013	Bill Segment				\$5,171.56	\$5,171.56	\$5,171.56	\$5,171.56	\$5,171.56

Get All

**Billed Consumption**

**Timeline**

November 2014

	14	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr
Meter Reads (0)											
Bills (12)		03	05	04	03	05	03	06	04	04	03
Payments (6)	23	21	22	22	21						
Collections (0)											
Customer Contacts (1)						07					
Field Activities (0)											
Cases (0)											

Done Trusted sites | Protected Mode: Off 100%

# DATA GATHERING

MDU SCADA View | Pressures | Usage | Odorizers | Temperatures

- + GPNG
- IGC
- > Boise**
  - > Idaho Falls
  - > Nampa
  - > Pocatello
  - > Twin Falls
- + CNGC
- + MDU

### IGC Boise Usage

**NOTE:** The information on this website is for informational purposes only. It is not real-time data and is *NOT* to be used for operational purposes.

Data View Mode:  List  Grid

Time Period:  Daily  Hourly

Monitored Area	mcf/d	Dth/d	Cur day mcf	Cur day Dth	Prev day mcf	Prev day Dth
ALSCO LV Run1	0.0	0.0	37.0	40.2	25.6	27.8
BandDFoods LV Run1	101.7	110.6	34.4	37.4	23.5	25.5
BoiseStateBoiler LV Run1	0.0	0.0	0.0	0.0	0.0	0.0
BoiseStateEng LV Run1	0.0	0.0	3.4	3.7	8.8	9.6
BoiseStateUniv LV Total	0.0	0.0	No data	No data	8.8	9.6
CentralPaving LV Run1	0.0	0.0	139.0	151.1	3.0	3.3
CSBeefPackers LV Run1	1452.9	1579.5	490.0	532.7	285.0	309.8
DarigoldBoise LV Run1	30.5	33.2	10.4	11.3	29.6	32.2
Darling LV Run1	258.3	280.7	87.1	94.7	10.7	11.6
DoubleJMilling LV Run1	0.0	0.0	129.0	140.2	309.0	335.8

- SCADA Data
- Real time and historical flow characteristics at specific locations in the system

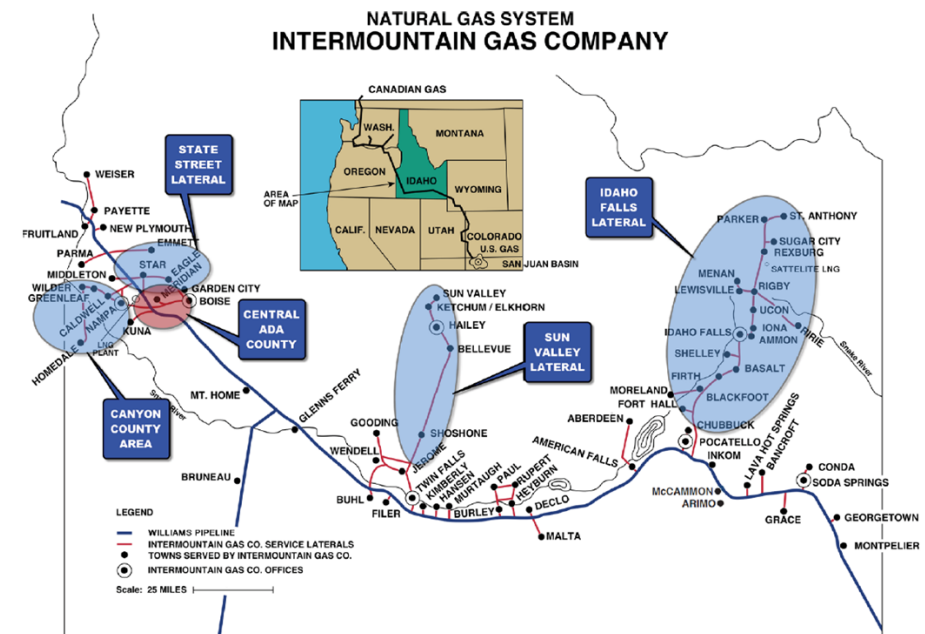


# DATA GATHERING

Town	HDD	Avg Daily Temperature (°F)
Boise	75	-10
Nampa	68	-3
Pocatello	82	-17
Idaho Falls	88	-23
Twin Falls	77	-12
Ketchum	82	-17

- Peak Heating Degree Day (HDD) modeled by IGC based on historical weather data

$$\text{Peak HDD} = 65 - \text{Average Daily Temp}$$



# CUSTOMER MANAGEMENT MODULE (CMM)

Customer Management Module for SynerGEE Gas, CMMPROD

File Edit View Assignment Load Analysis Tools Help

Tree View:

- cmm2adm
  - Demand Groups
  - Meter Codes
  - Meter Routes
  - Models
  - Rate Codes
  - Status Codes
  - Usage Read Codes
    - Normal Read
    - UNKNOW
  - Weather Effector Types
  - Weather Zones
    - CNG - ARLINGTON WA
    - CNG - BAKER OR
    - CNG - BELLINGHAM WA
    - CNG - BREMERTON WA
    - CNG - BURLINGTON\_MOUNT VERNON WA
    - CNG - HERMISTON OR
    - CNG - HOQUIAM WA
    - CNG - KELSO\_LONGVIEW WA
    - CNG - MOSES LAKE WA
    - CNG - ONTARIO OR
    - CNG - PASCO WA
    - CNG - PENDLETON OR

Name	Base Colu...	Heat Colu...	Cool Colu...	Description
Commercial	3	4		
Industrial	5	6		
Interruptible	7	8		
LargeVolume	9	10		
Other	15	16		
Residential	1	2		
Special	13	14		
Transportati...	11	12		

Customer Find

Attribute: Postal Code Condition: Is equal to Value: 99336

Selection Criteria: POSTALCODE = '99336'

Results (998)

Service Id	Pipe	Account Number	Base	Heat	Weather Zone
1873610151	P104535		0.588	0.109	CNG - PASCO WA
772453629	P105912		0.233	0.106	CNG - PASCO WA
1917417277	P221198		0.000	0.097	CNG - PASCO WA
8634265752	GL7877		0.232	0.116	CNG - PASCO WA
5713268823	GL6701		0.045	0.106	CNG - PASCO WA
986954885	GL6701		0.000	0.111	CNG - PASCO WA
6506813365	P221182		0.427	0.089	CNG - PASCO WA
3936504333	GL 666R		0.091	0.118	CNG - PASCO WA

Multi-edit resultant customers

Attribute: Account Number Value: Update Selected results only

- Brings CC&B customer data into Synergi as demands file
- Demand file applies load spatially in the model.

## IDAHO FIXED NETWORK UPDATE

- IGC has a goal of reading 90% of customer meters through Fixed Network Devices
- Device installation has been ongoing with 61% coverage completed through Q1 2023
- 90% coverage expected by end of year 2023

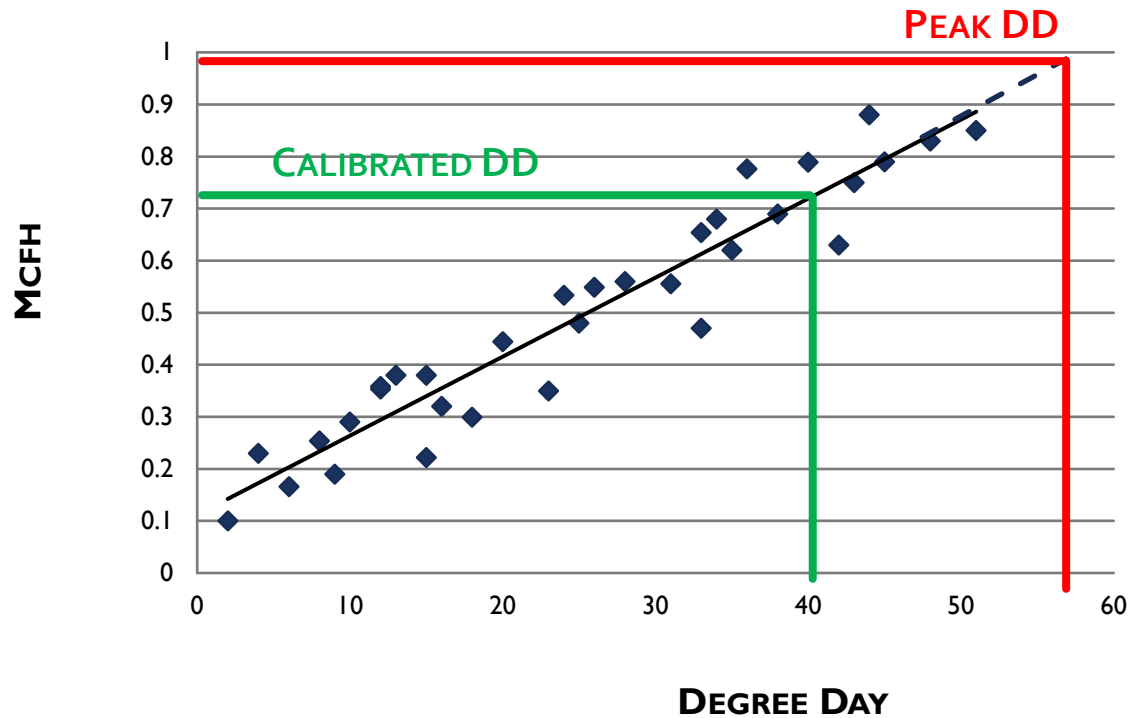
## FIXED NETWORK TO MODELING COMPARISON

<b>Fixed Network VS CMM</b>	<b>2021</b>	<b>2023</b>
<b>Number of Data Points Compared</b>	<b>100</b>	<b>892</b>
<b>% Difference</b>	<b>12%</b>	<b>2%</b>

- 2021 Data was collected from a single service territory
- 2023 Data was collected from all IGC service territories containing fixed network devices

# CALIBRATED VS PEAK DEGREE DAY

## LOAD VS TEMPERATURE



$$y = 0.0152x + 0.1118$$

HEAT

BASE

$$40 \text{ DD} = 0.72 \text{ MCFH}$$

$$58 \text{ DD} = 0.99 \text{ MCFH}$$



# IDENTIFICATION OF SYSTEM DEFICITS/CONSTRAINTS



# SYNERGI MODELING CAPABILITIES:

- Review Large Volume Customer requests
- Model RNG
- Supports design/sizing of pipe and pipeline components (regulator stations, compressors)
- Future planning
- Model IRP predicted growth
- Identify deficiencies
- Determine system reliability
- Optimize distribution enhancement options
- Cold Weather Action Plans and Modeling Curtailments/Interruptible Customers

# WHAT IS A CAPACITY DEFICIT?

- A deficit is defined as a critical system that is at or limiting capacity.
- Critical system examples include:
  - Pipeline bottlenecks
  - Minimum inlet pressure to a regulator station or HP system
  - Minimum inlet pressure to compressor (suction)
  - Component limiting capacity



# DISTRIBUTION SYSTEM MODELING PROCESS TO ENSURE WE CAN MEET IRP GROWTH PREDICTIONS

- As part of the IRP process, we complete a comprehensive review of all of our distribution system models every two years to ensure that we can maintain reliable service to our customers during peak low temperature events.
- With our capital budget cycle, we also complete system reviews on an annual basis.
- If a deficit is predicted the system is evaluated and a reinforcement/enhancement is proposed and selected based on alternative analysis considerations and placed into the capital budget based on timing needs of the predicted deficit.



# DISTRIBUTION ENHANCEMENT/REINFORCEMENT OPTIONS TO ADDRESS DEFICITS

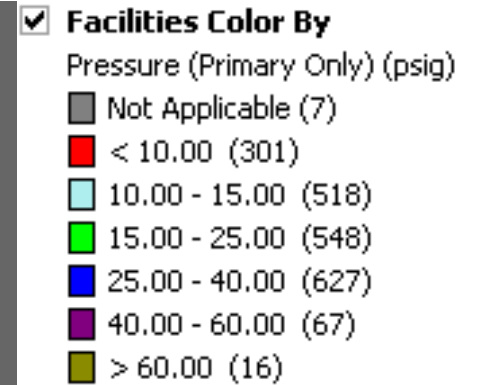
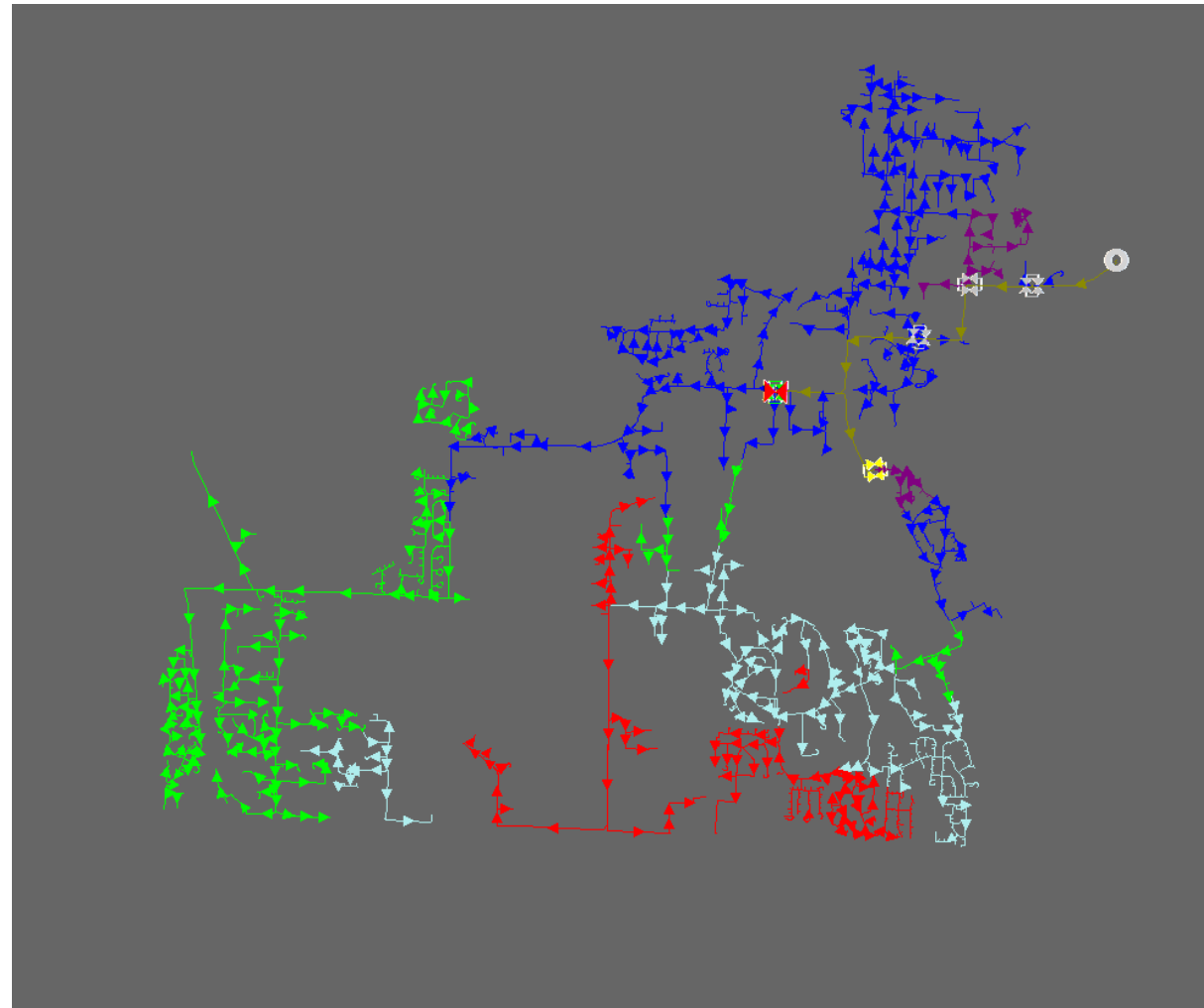


# ENHANCEMENT OPTIONS

- Pipeline:
  - Replacements
  - Reinforcements
  - Loops & Back feeds
  - Pressure Increases
  - Upgrades
- Facility Upgrades
- Additional Regulator Stations feeding the distribution system
- New Strategically placed Gate Stations
- Compressor Stations

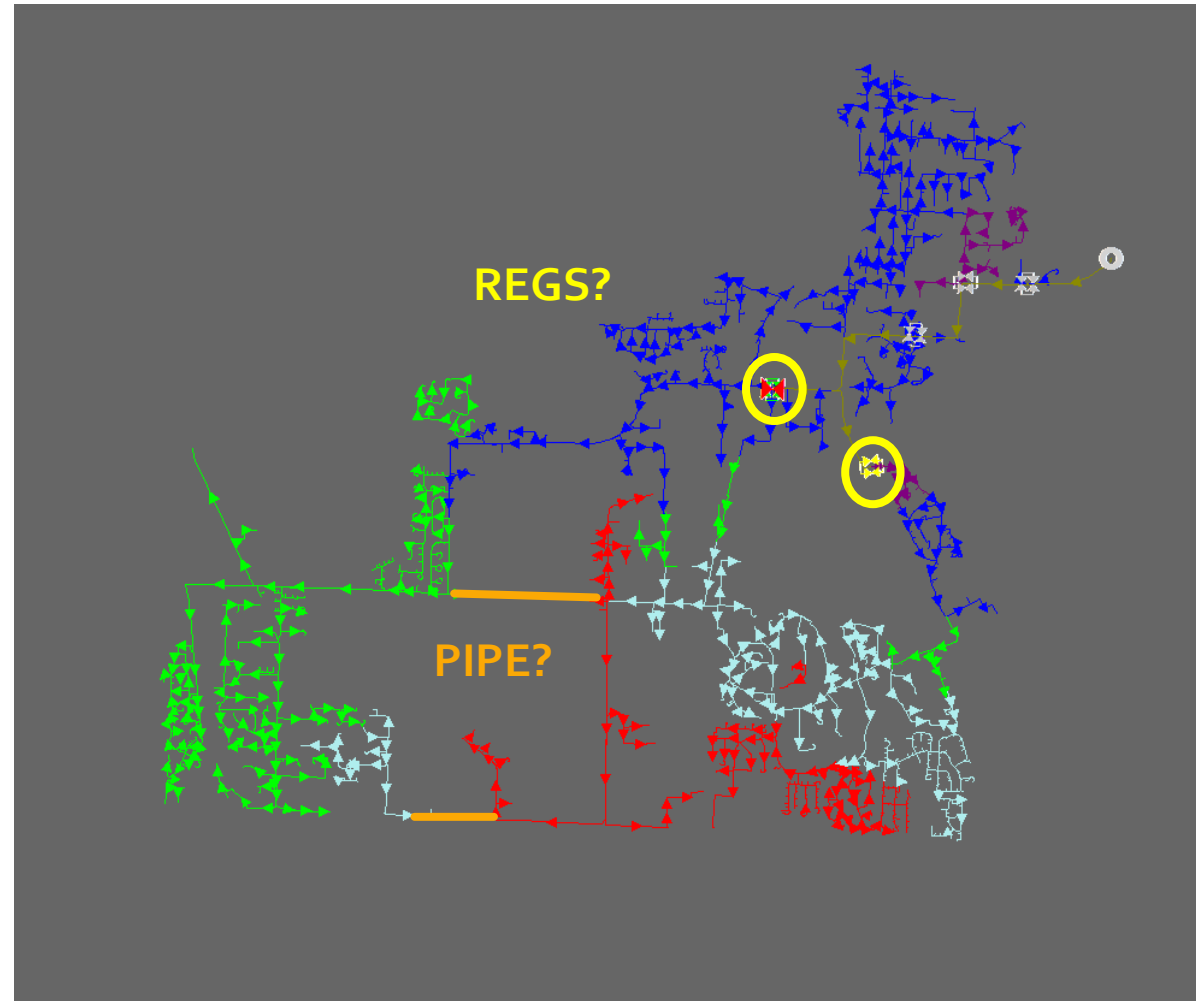
# DISTRIBUTION ENHANCEMENT EXAMPLE

- Theoretical low-pressure scenario



# DISTRIBUTION ENHANCEMENT OPTIONS

## ■ Low pressure scenario



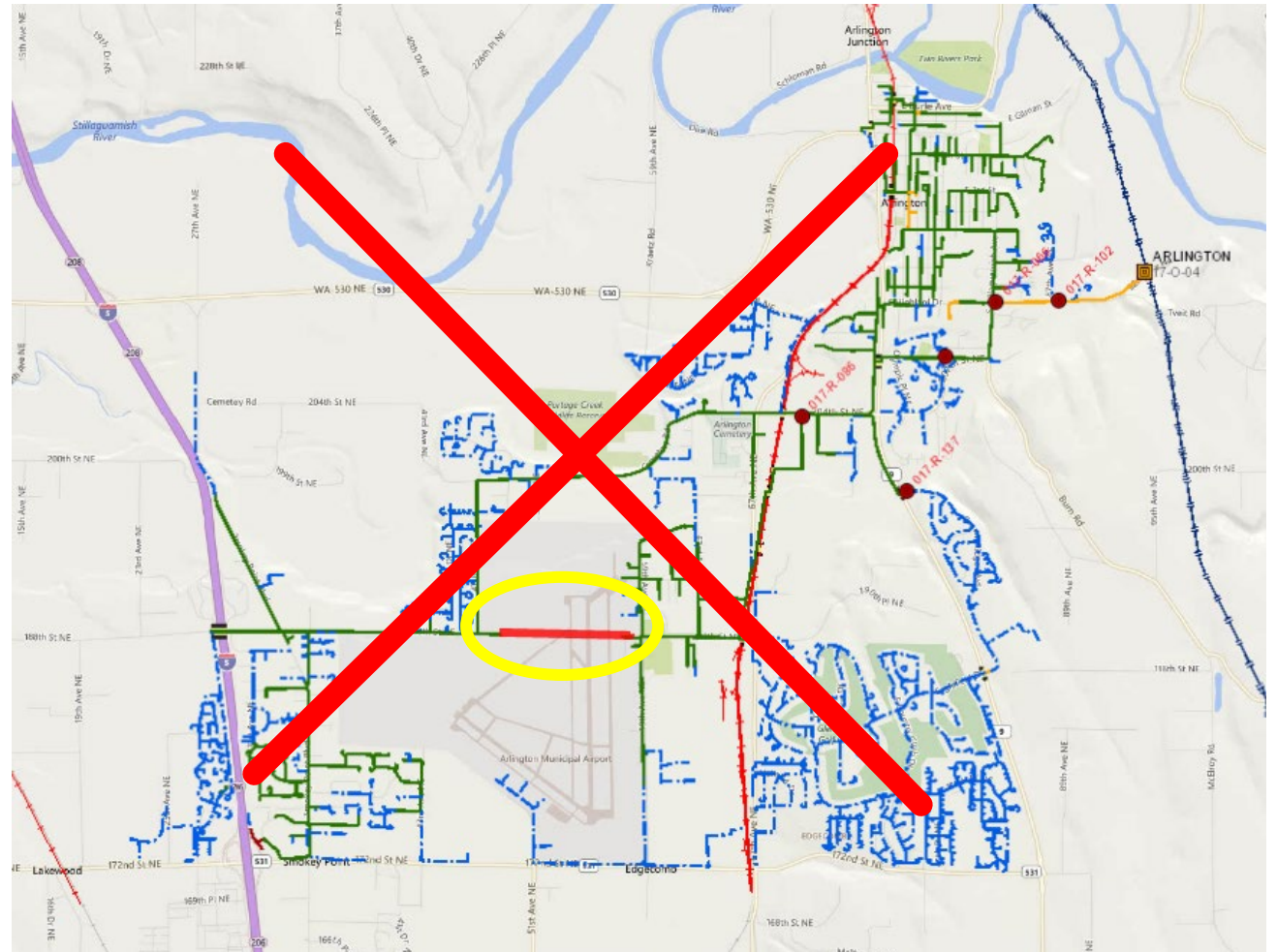
**Facilities Color By**  
Pressure (Primary Only) (psig)

■ Not Applicable (7)
■ < 10.00 (301)
■ 10.00 - 15.00 (518)
■ 15.00 - 25.00 (548)
■ 25.00 - 40.00 (627)
■ 40.00 - 60.00 (67)
■ > 60.00 (16)

- Compressor station infeasible
- Other Solutions?

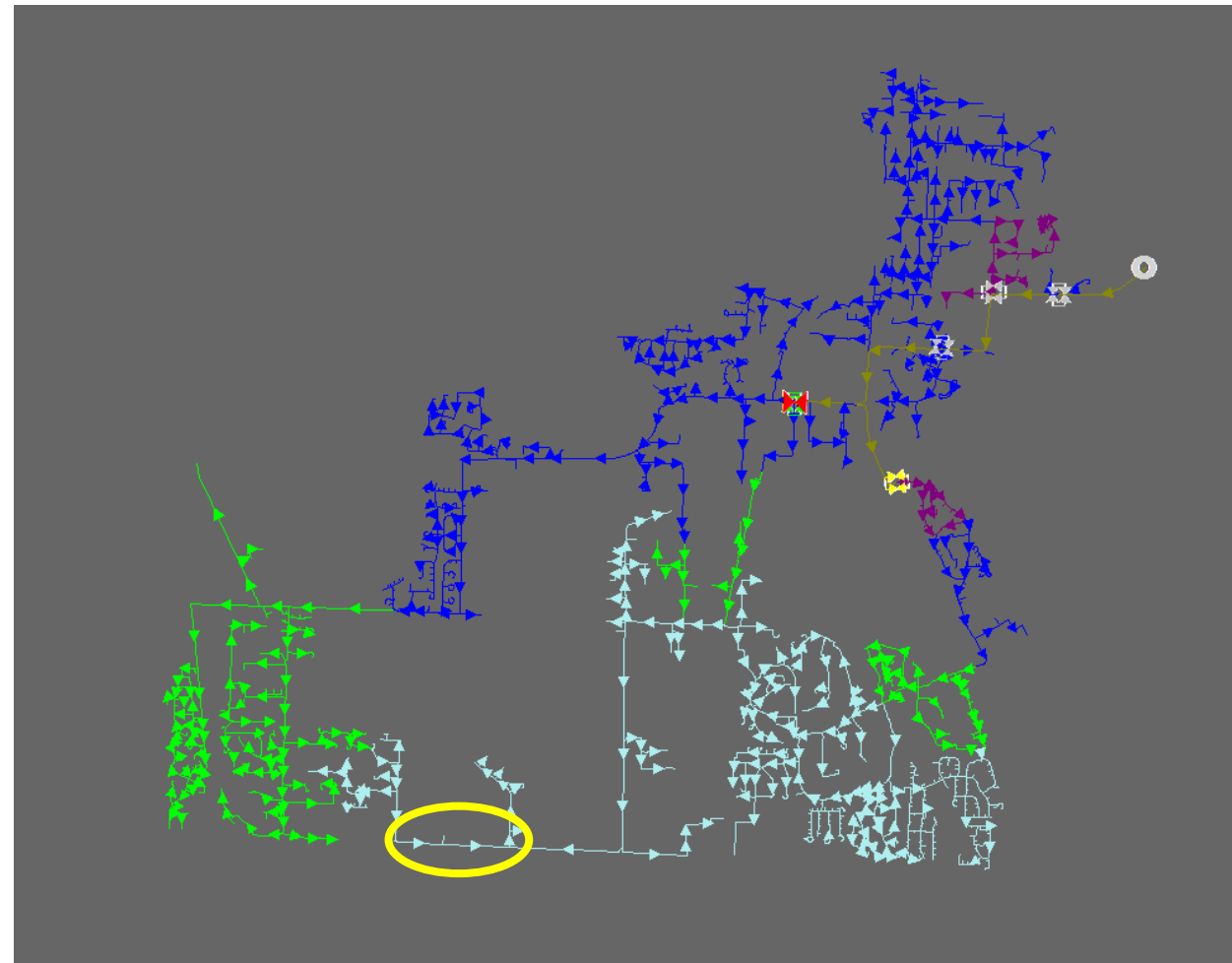
# DISTRIBUTION ENHANCEMENT OPTIONS

- Reinforcement option #1



# DISTRIBUTION ENHANCEMENT OPTIONS

## ■ Reinforcement option #2



**Facilities Color By**  
Pressure (Primary Only) (psig)

■	Not Applicable (8)
■	< 10.00 (0)
■	10.00 - 15.00 (780)
■	15.00 - 25.00 (367)
■	25.00 - 40.00 (844)
■	40.00 - 60.00 (71)
■	> 60.00 (16)



# ENHANCEMENTS CONSIDERATIONS

- Scope
- Cost
- Capacity Increase
- Timing
- System Benefits
- Alternative Analysis
- Feasibility





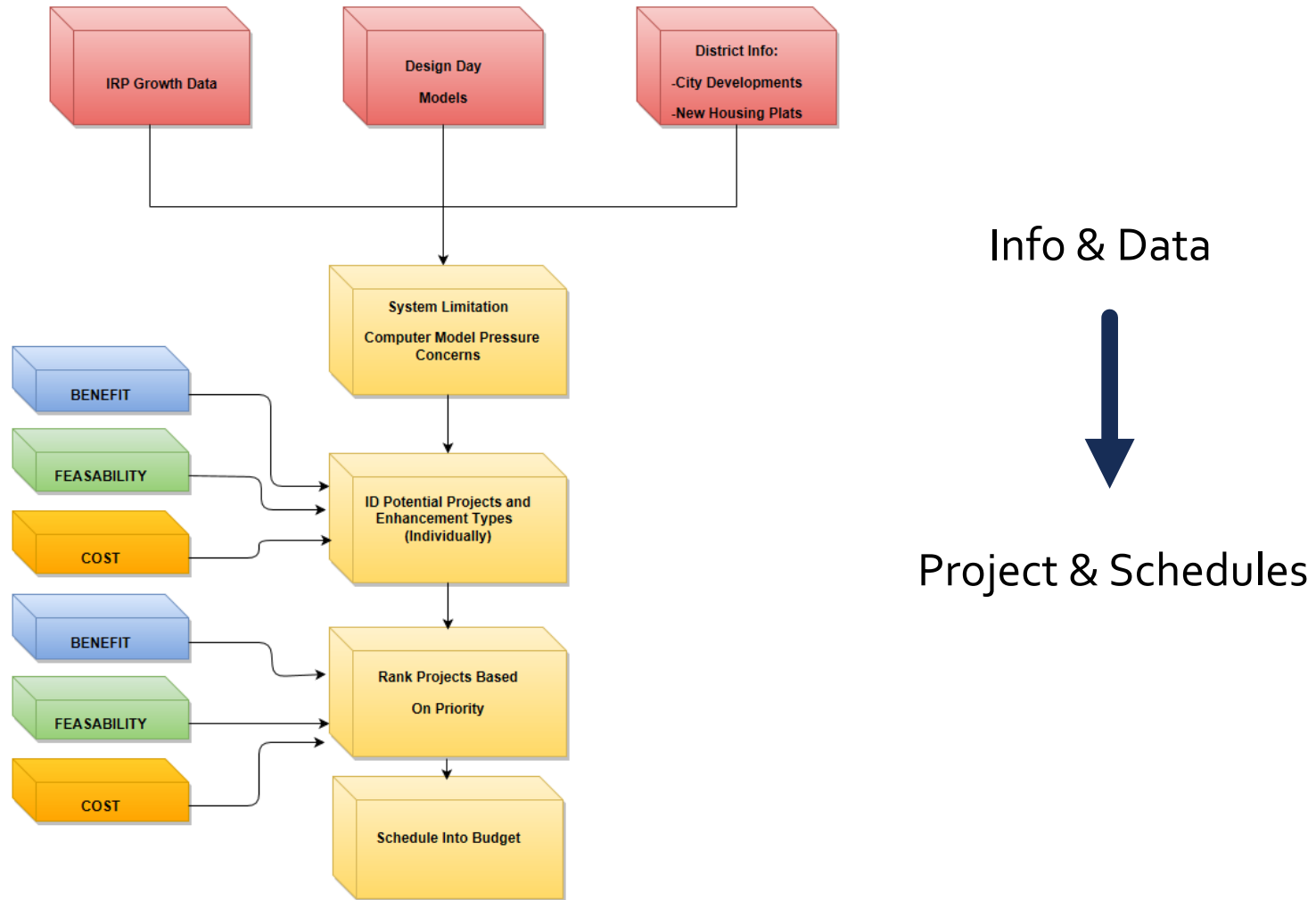
# ENHANCEMENT REVIEW AND SELECTION PROCESS TO CAPITAL BUDGET



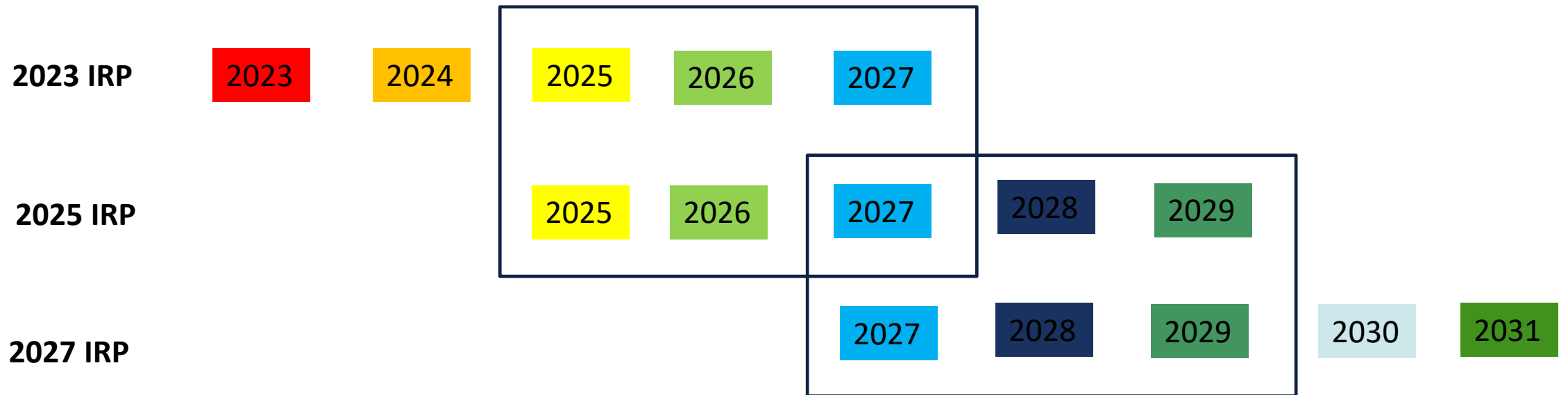
## ENHANCEMENT SELECTION GUIDELINES:

- Shortest segment of pipe that addresses deficiency
- Segment of pipe with the most favorable construction conditions
- Segment of pipe that minimizes environmental concerns and impacts to the community
- Segment of pipe that provides opportunity to add additional customers
- Total construction cost including restoration

# ENHANCEMENT SELECTION PROCESS:



# ITERATIVE PROCESS OF IRP





**QUESTIONS?**



# AVOIDED COST METHODOLOGY

MIN PARK

REGULATORY ANALYST



## A BRIEF HISTORY

- INT-G-19-04, Order No. 34536 directed the Company to review its avoided cost calculations.
- In early 2020, Intermountain invited interested members of the Energy Efficiency Stakeholder Committee (EESC) to join an Avoided Cost Subcommittee.
  - Met three times between February and June 2020
  - The Subcommittee came to an understanding on the general Avoided Cost methodology
  - Avoided cost subcommittee met in March of 2022
  - Could not agree on distribution cost (still set at 0)

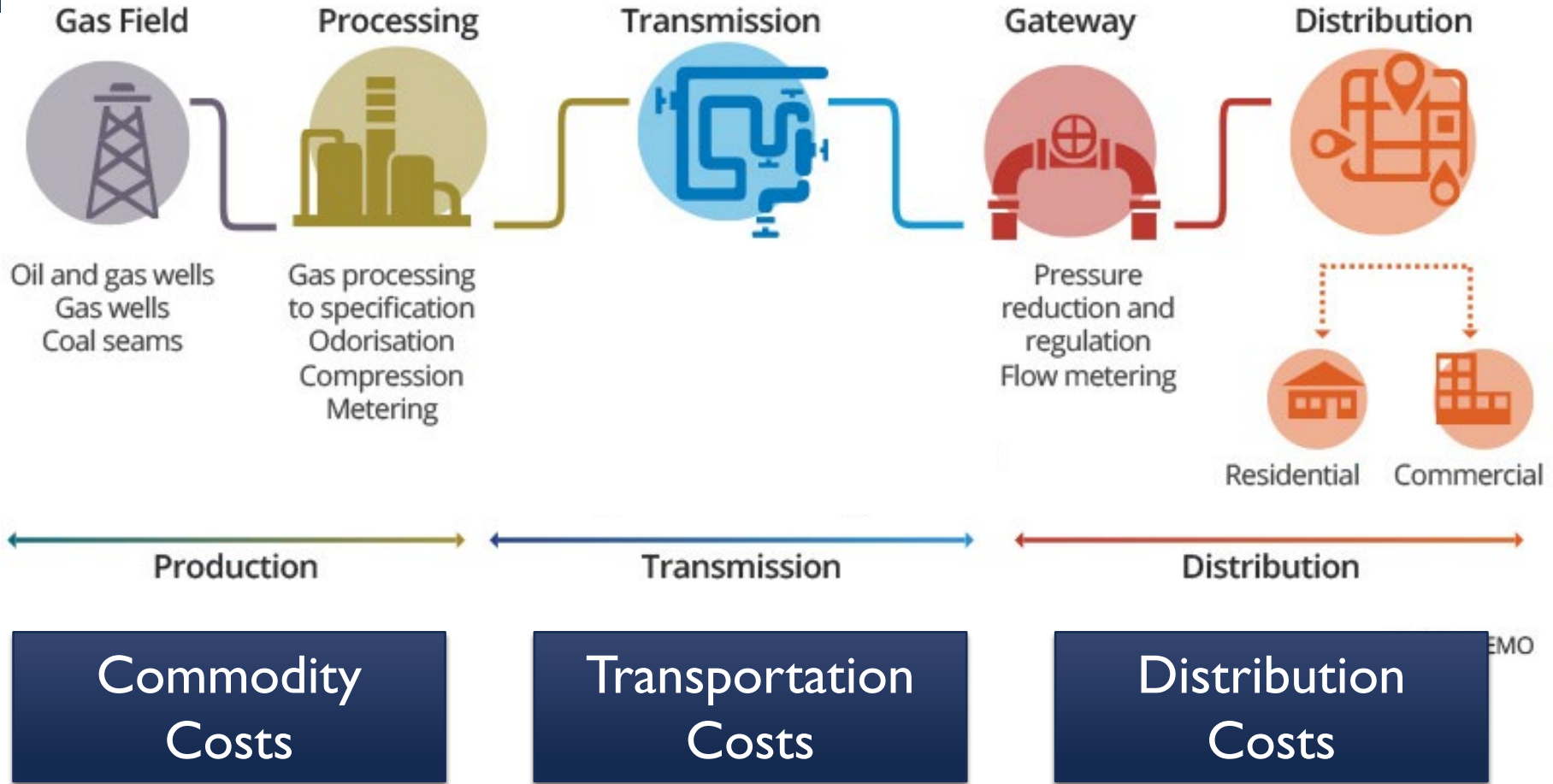
## AVOIDED COST OVERVIEW

“A Penny Saved is a Penny Earned.”

- The *Avoided Cost* is used to put a dollar value to energy savings.
- This allows utilities to spot opportunities where energy efficiency is more cost effective than a supply-side option.



# NATURAL GAS SUPPLY CHAIN



# FORMULA

$$AC_{Nominal} = CC + TC + VDC$$

- $AC_{Nominal}$  = Nominal Avoided Cost Per Therm
- $CC$  = Commodity Cost
- $TC$  = Transportation Cost
- $VDC$  = Variable Distribution Cost

# COMMODITY COST CALCULATION

- The price of a molecule of gas depends on the basin, the time of year, and even the day of the week.
- Calculation starts with internal 30-year price forecasts for three primary basins.
  - Basins prices are weighted based on company Day Gas purchase data.
  - Normal Heating Degree Days (HDD65) are used to shape monthly prices.

# TRANSPORTATION COST CALCULATION

- Includes the cost of reserving additional capacity on the Northwest Pipeline.
  - Based on costs & volumes listed in latest tariffs for RS and GS-I customers.
- Also contains variable costs associated with transporting gas to city gate.

# DISTRIBUTION COST CALCULATION

- Energy efficiency can lead to delaying or even avoiding costly pipeline capacity expansions.
- Large expansions occur irregularly, making it difficult to quantify this type of saving.
- Currently, the calculation contains a placeholder value of \$0.00 for this cost component.
- As part of this IRP Process, Intermountain will work with stakeholders to try to develop a distribution system cost.

# 2023 IRP UPDATES

- Updated Basin price forecast.
- Updated HDD Shaping to use 2022 Normal weather.
- Added new year of Day Gas purchase data.
- Updated transportation cost with latest PGA tariff.
- Inflation Rate updated from 2% to 3.15 %.

Levelized Avoided Cost by Year  
Discounted 2022 \$ Therm

YEAR	UPDATED COST	PREVIOUS COST
2022	\$0.87	0.50
2023	\$1.27	0.50
2024	\$1.15	0.50
2025	\$1.05	0.50
2026	\$0.99	0.50
2027	\$0.93	0.51
2028	\$0.89	0.51
2029	\$0.85	0.51
2030	\$0.82	0.51
2031	\$0.80	0.51
2032	\$0.78	0.52



**QUESTIONS?**



# Energy Efficiency

KATHY WOLD

MANAGER, ENERGY EFFICIENCY





# Energy Efficiency

Demand Side Management (DSM) refers to resources acquired through the reduction of natural gas consumption due to increases in efficiency of energy use.



DSM: Resources acquired through the reduction of consumption due to energy efficiency

Option A:

Purchase MMBtu from Supplier A

\$\$\$\$



Option B:

Energy Efficiency Program

Therm savings (MMbtu)

\$\$





## Energy Efficiency

Rebate	Minimum Efficiency	Incentive Amount
Combination Boiler for Space and Water Heat	95% AFUE	\$800
Furnace	95% AFUE	\$350
Boiler	95% AFUE	\$800
Storage Water Heater	.68 UEF	\$115
Tankless Water Heater Tier I	.91 UEF	\$325
Tankless Water Heater Tier II	.87 UEF	\$300
Smart Thermostat Use the ENERGY STAR Smart Thermostat Finder.	ENERGY STAR® Certified	\$100



### **WHOLE HOME TIER I – \$900**

- HERS rated
- Air sealing at or below 3 ACH at 50 Pa
- Ceiling insulation at or above R-49
- Ducts and air handler located inside conditioned space or duct leakage to outside of less than 4 CFM25/100 ft2 CFA
- Furnace efficiency at or above 97% AFUE

### **WHOLE HOME TIER II – \$700**

- HERS rated
- Air sealing at or below 4 ACH at 50 Pa
- Ducts and air handler located inside conditioned space or duct leakage to outside of less than 4 CFM25/100 ft2 CFA
- Furnace efficiency at or above 95% AFUE



## Energy Efficiency

### WHOLE HOME TIER I – \$900

- HERS rated
- Air sealing at or below 3 ACH at 50 Pa
- Ceiling insulation at or above R-49
- Ducts and air handler located inside conditioned space or duct leakage to outside of less than 4 CFM25/100 ft2 CFA
- Furnace efficiency at or above 97% AFUE

### WHOLE HOME TIER II – \$700

- HERS rated
- Air sealing at or below 4 ACH at 50 Pa
- Ducts and air handler located inside conditioned space or duct leakage to outside of less than 4 CFM25/100 ft2 CFA
- Furnace efficiency at or above 95% AFUE

**NEW OPTION:** Stack the savings and stack the cash in your pocket! Layer water heating and/or smart thermostat rebates on top of the Whole Home Tier I or Tier II rebate.

#### Example 1:

Whole Home Tier I	\$900
Tier I Tankless Water Heater	\$325
Smart Thermostat	\$100
<b>Total Potential Rebate</b>	<b>\$1,325</b>

#### Example 2:

Whole Home Tier II	\$700
Smart Thermostat	\$100
<b>Total Potential Rebate</b>	<b>\$800</b>



## Commercial Energy Efficiency

### HEATING INCENTIVES

Eligible Appliance	Efficiency Rating	Rebate
Condensing Unit Heater	90% AFUE or Greater Efficiency	\$1,500
Boiler Reset Control	N/A	\$350
High-Efficiency Condensing Boiler	90% or Greater Thermal Efficiency and $\geq 300$ kBTUh	\$4.50/kBTUh

### KITCHEN EQUIPMENT INCENTIVES

Eligible Appliance	Efficiency Rating	Rebate
Fryer	ENERGY STAR® Certified	\$800
Steamer	ENERGY STAR® Certified ( $\geq 38\%$ cooking eff/ $\leq 2,038$ BTU/hr/pan Idle Rate)	\$1,100
Griddle	ENERGY STAR® Certified ( $\geq 38\%$ cooking eff/ $\leq 2,650$ BTU/hr/pan Idle Rate)	\$200



# INTERMOUNTAIN GAS COMPANY 2023 CONSERVATION POTENTIAL ASSESSMENT

EESC PRESENTATION  
FINAL RESULTS

May 25, 2023



# GUIDEHOUSE TEAM



**Robin Maslowski**  
**Project Director**  
**Guidehouse**



**Jon Starr**  
**Professional Director**  
**Guidehouse**



**Neil Podkowsky**  
**Project Manager**  
**Guidehouse**



**Aneesha Aggarwal**  
**Deputy Project Manager**  
**Guidehouse**



**Brian Chang**  
**Measure Lead**  
**Guidehouse**



**Raniel Chan**  
**Modeling Lead**  
**Guidehouse**



# WHAT ARE THE OBJECTIVES FOR THIS CONSERVATION POTENTIAL ASSESSMENT (CPA)?

## Assess Achievable Energy Savings Potential

- Rationally and transparently estimate achievable natural gas energy efficiency (EE) potential within IGC service territory
- Forecast net impacts from 2024-2044

## Apply Results

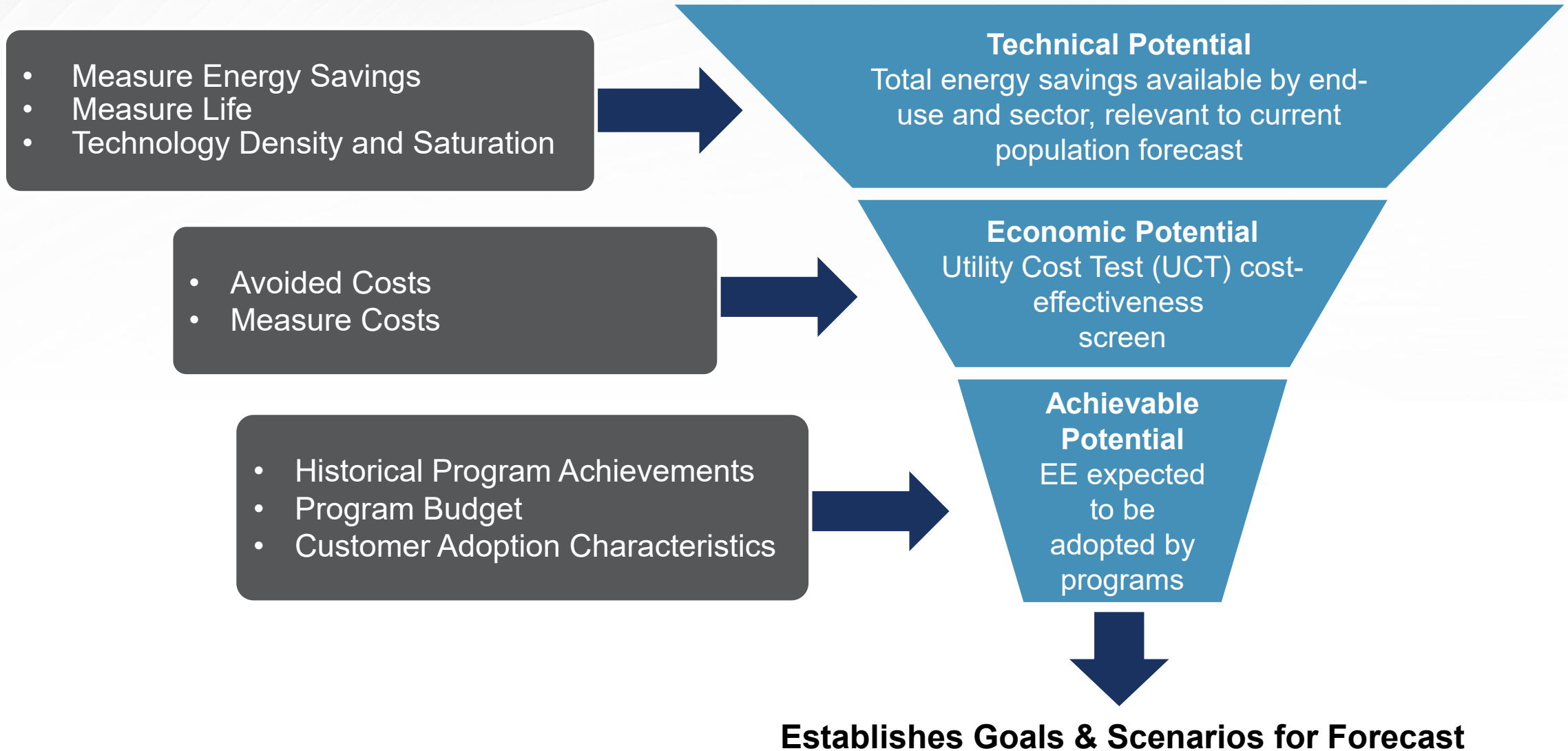
- Inform IGC's EE goals, portfolio planning, and budget setting
- Contribute to IGC's Integrated Resource Planning process (IRP)
- Identify new EE savings opportunities



# 2023 CPA METHODOLOGY

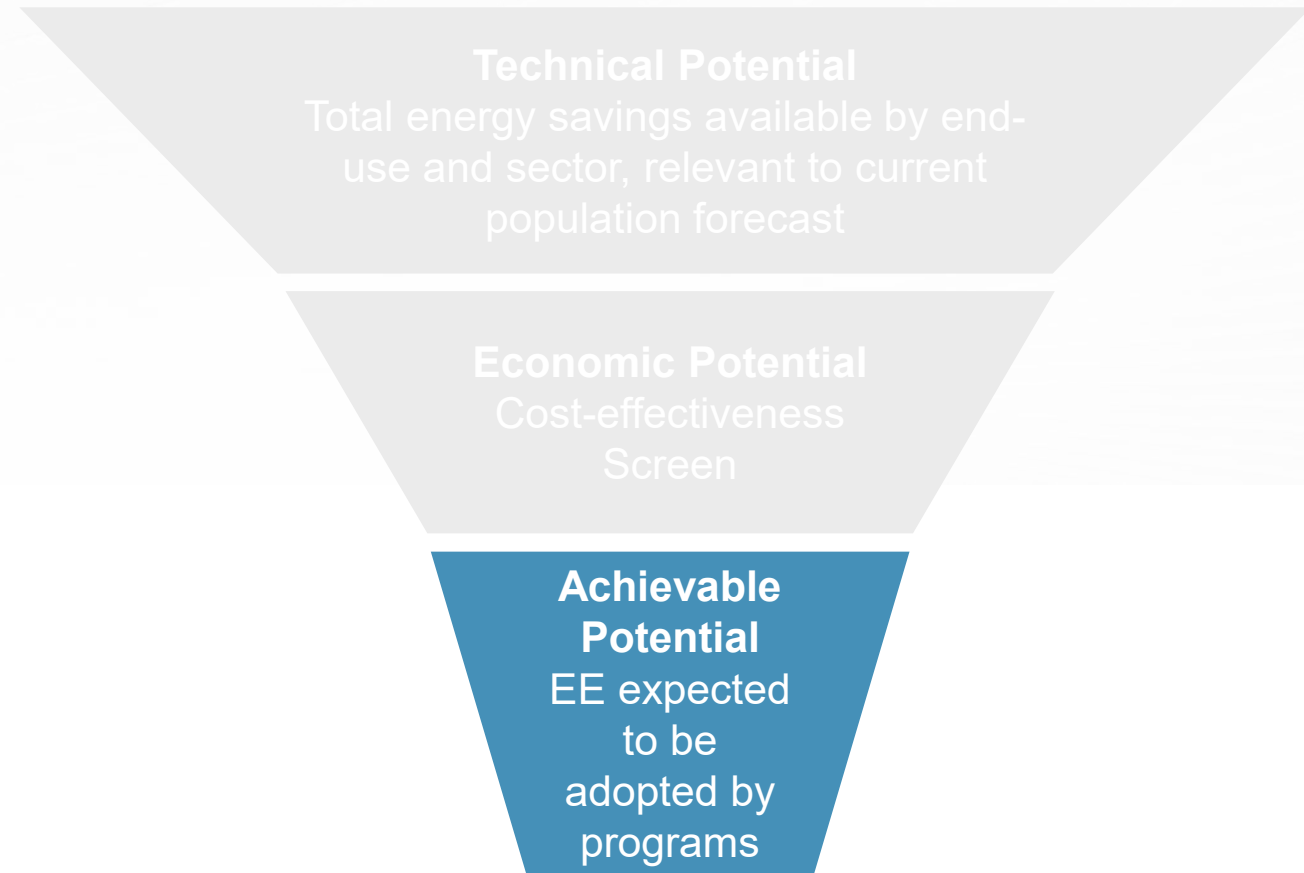


# WHAT IS A CONSERVATION POTENTIAL ASSESSMENT?



# ACHIEVABLE POTENTIAL FOR REBATE PROGRAMS

- The EE savings that could be expected in response to specific levels of program incentives and assumptions about existing policies, market influences, and barriers.
- Estimated by:
  - Calculating the market share, or penetration of measures based on customer awareness of the measure and customer willingness to adopt the measure
  - Willingness is determined by comparing payback time associated with efficient measure against competing measures
  - Calibrating forecast using historic program data

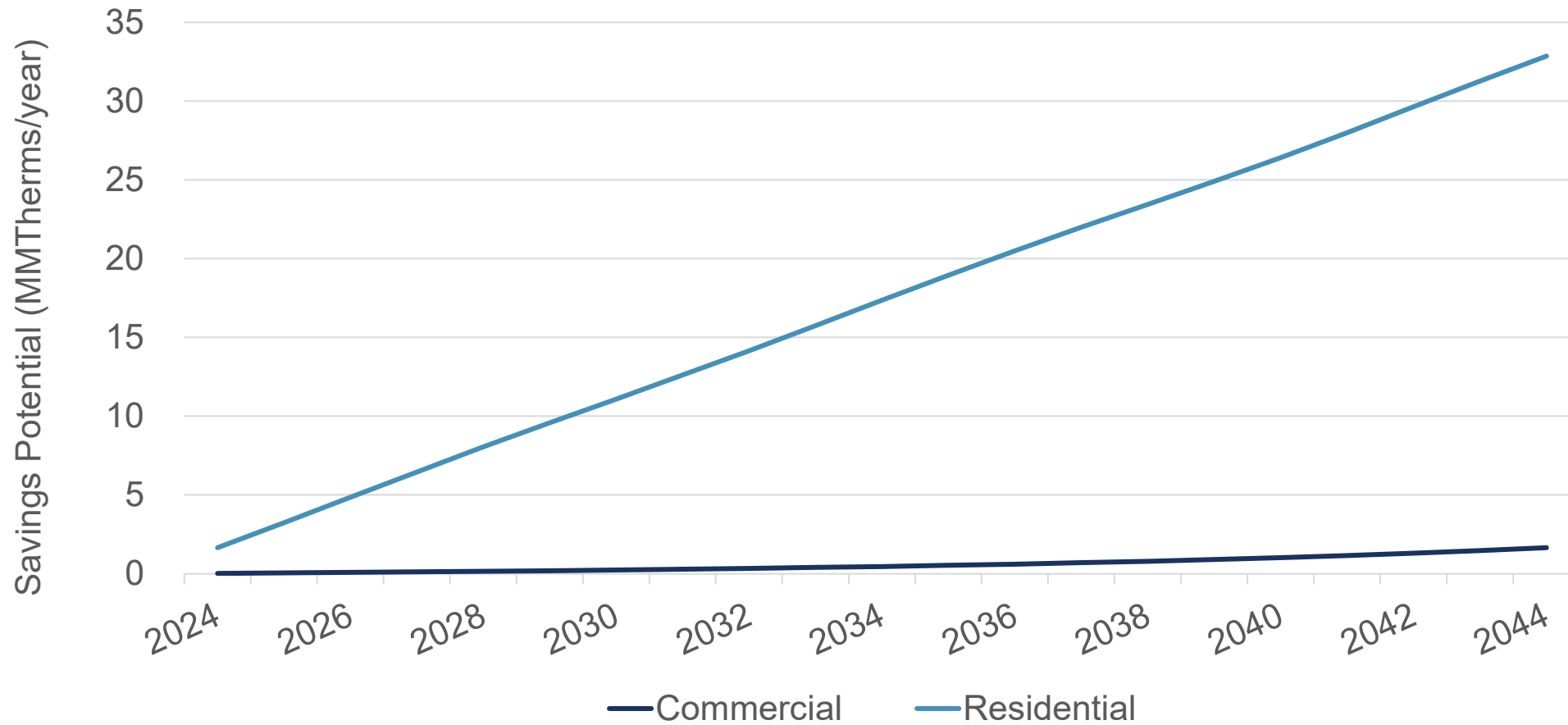




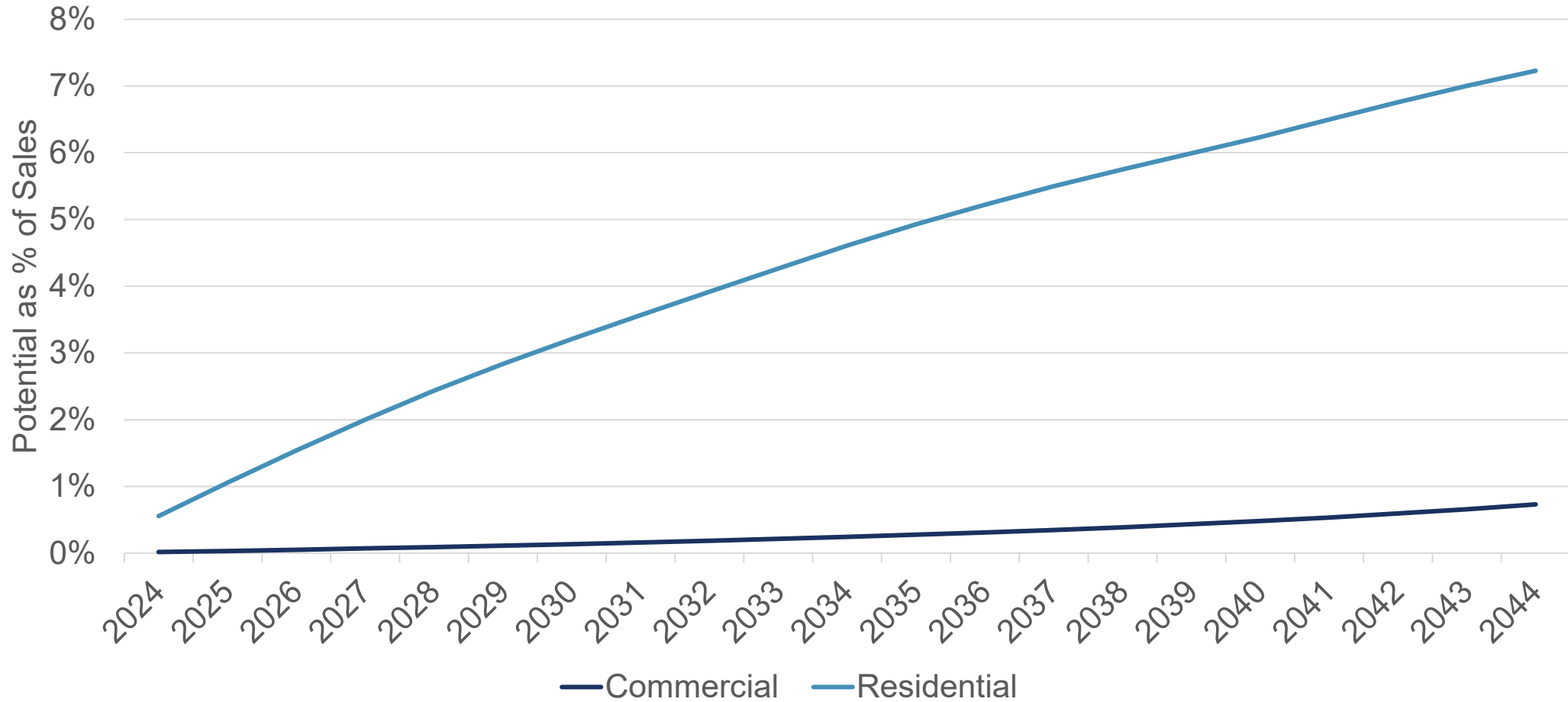
# DETAILED RESULTS



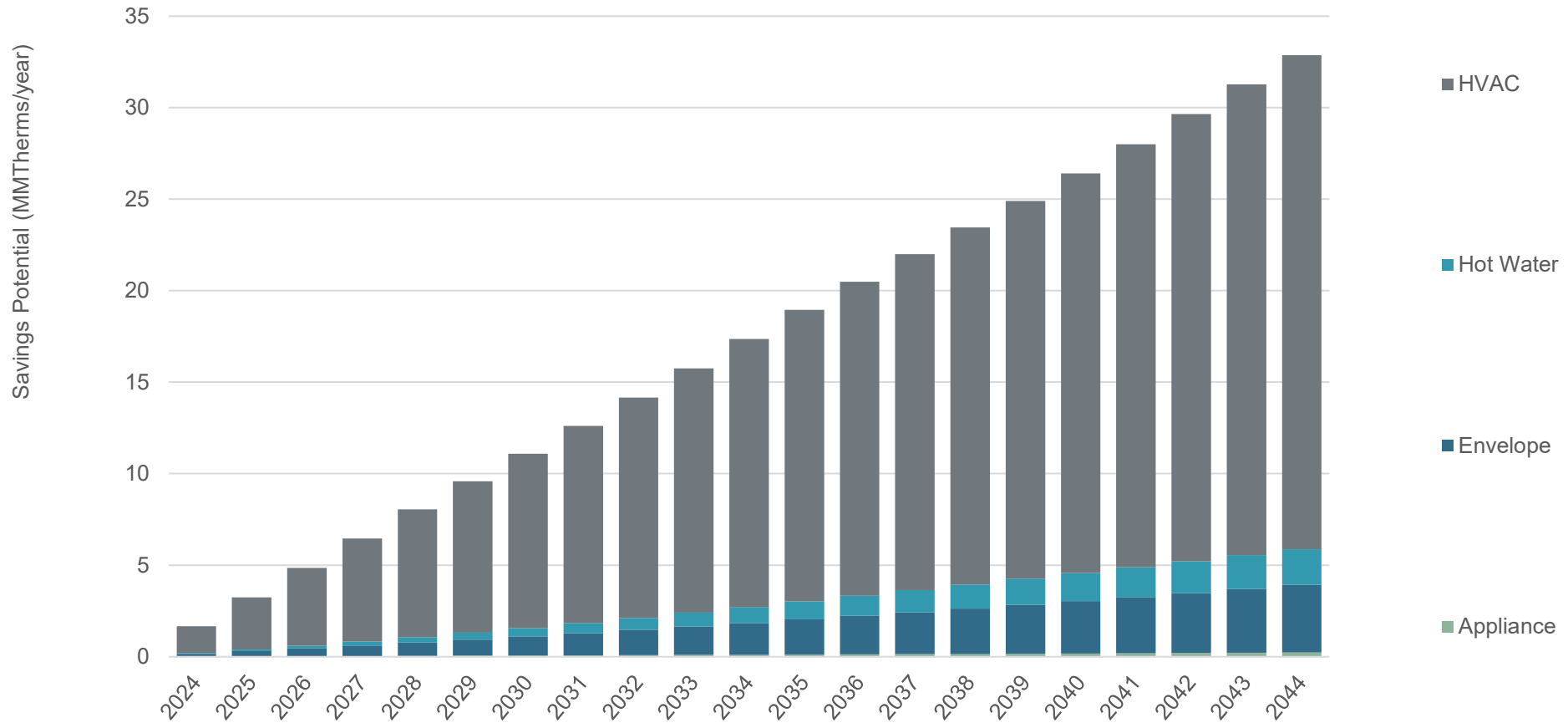
# NATURAL GAS ENERGY (MMTHERMS/YEAR) CUMULATIVE NET ACHIEVABLE POTENTIAL BY SECTOR



# TOTAL NATURAL GAS CUMULATIVE NET ACHIEVABLE POTENTIAL AS A % OF FORECAST NATURAL GAS SALES

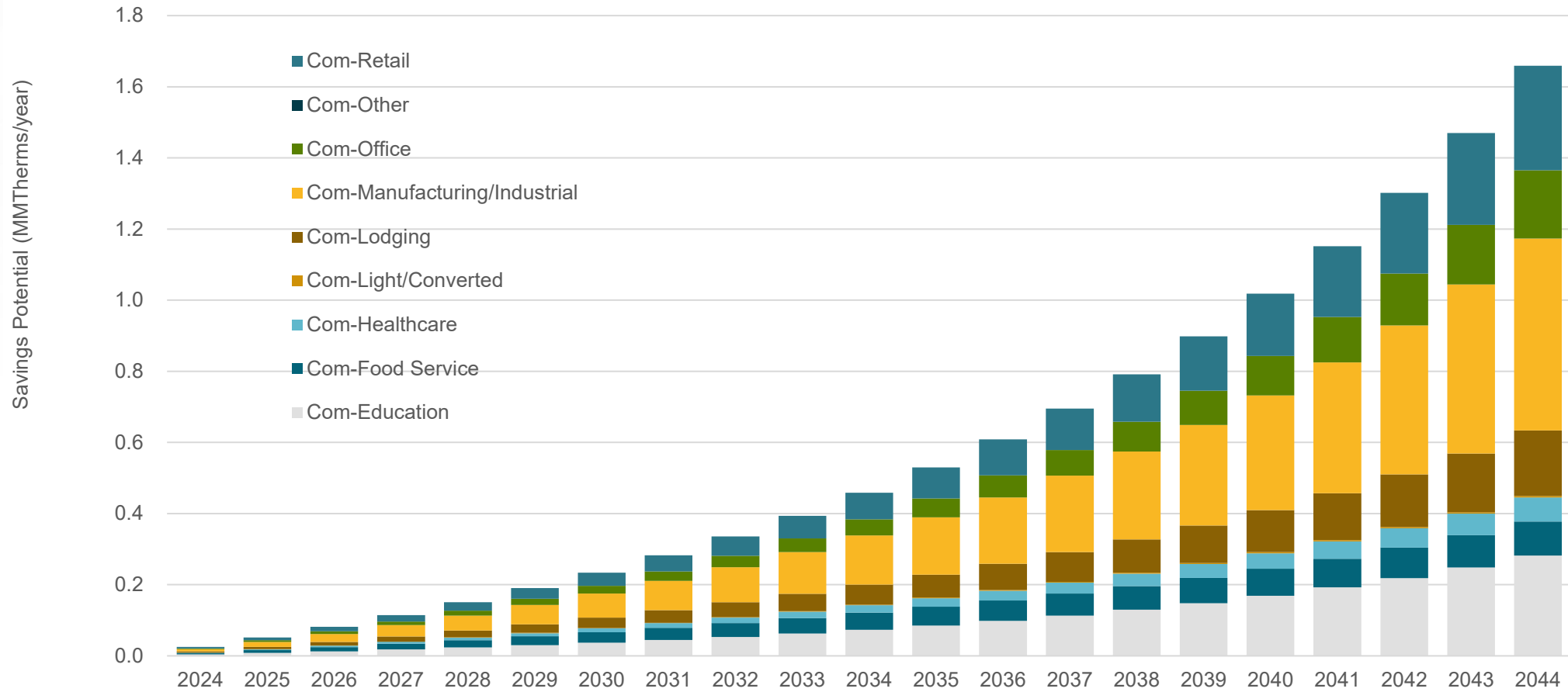


# CUMULATIVE NET NATURAL GAS ACHIEVABLE POTENTIAL BY RESIDENTIAL SECTOR END USE (MMTHERMS/YEAR) (BUSINESS AS USUAL)





# CUMULATIVE NET NATURAL GAS ACHIEVABLE POTENTIAL BY COMMERCIAL CUSTOMER SEGMENT (MMTHERMS/YEAR) (BUSINESS AS USUAL)



# SCENARIOS

## Unconstrained Historical Budget

- Assumes a **ramp up** of customer adoption **through 2029** driven by increased IGC program activity
- **Without constraining program spending to historical levels.**
- Incentives at **50%** incremental cost.

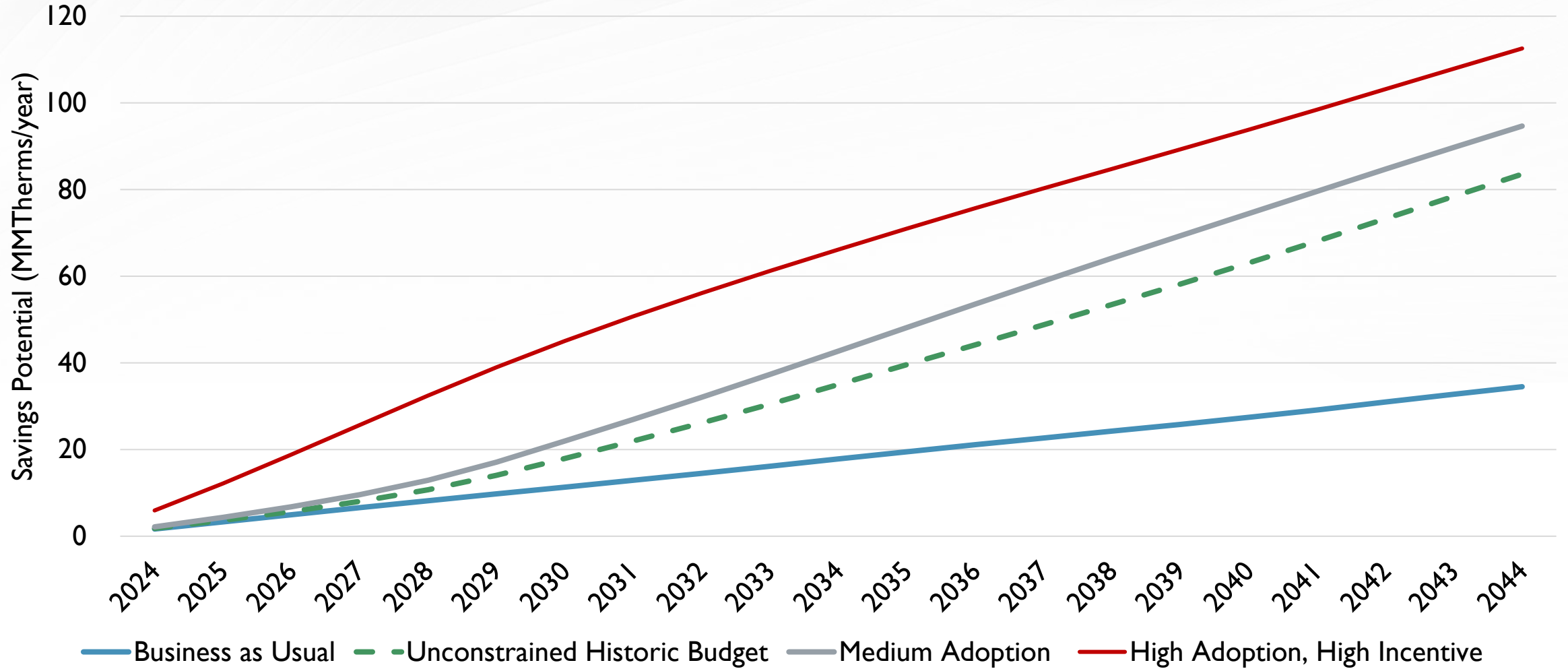
## Medium Adoption

- **Increase** in adoption parameters for **customer awareness and willingness to adopt EE technologies.**
- Incentives at **50%** incremental cost.

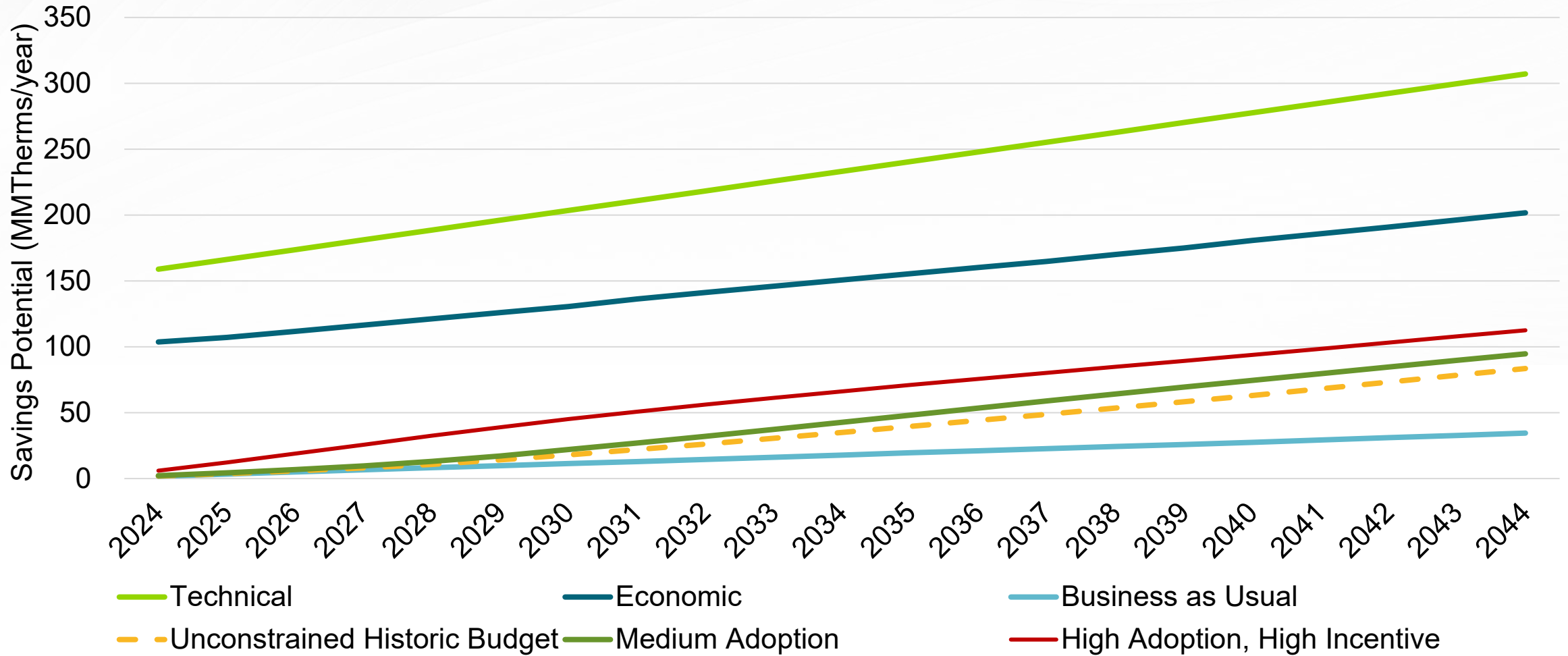
## High Adoption, High Incentive

- **Further increased** adoption parameters for **customer awareness and willingness to adopt** to highest levels based on Guidehouse's experience and rules of thumb.
- Incentives at **65%** incremental cost.

# TOTAL NATURAL GAS ENERGY (MMTHERMS/YEAR) CUMULATIVE NET ACHIEVABLE POTENTIAL BY SCENARIO



# CUMULATIVE NET NATURAL GAS ENERGY ACHIEVABLE SAVINGS BY SCENARIO





# QUESTIONS?



**BREAK**



# SUPPLY & DELIVERY RESOURCES

ERIC WOOD

SUPERVISOR, GAS SUPPLY



# GAS SUPPLY PLANNING

- What's the goal? To meet the energy needs and expectations of our customers:
  - Reliability (365 days per year)
  - Security (delivery on the coldest day)
  - Competitive and stable prices through a mix of fixed priced hedges
  - Efficiently meet future growth
  - Frequently evaluate the portfolio



# NATURAL GAS SUPPLIES

## What are Traditional Supply Resources?

- Natural gas supply; the molecules or “commodity”
- Interstate pipeline capacity
- Storage facility capacity
- Energy Efficiency

## What are Non-Traditional Supply Resources?

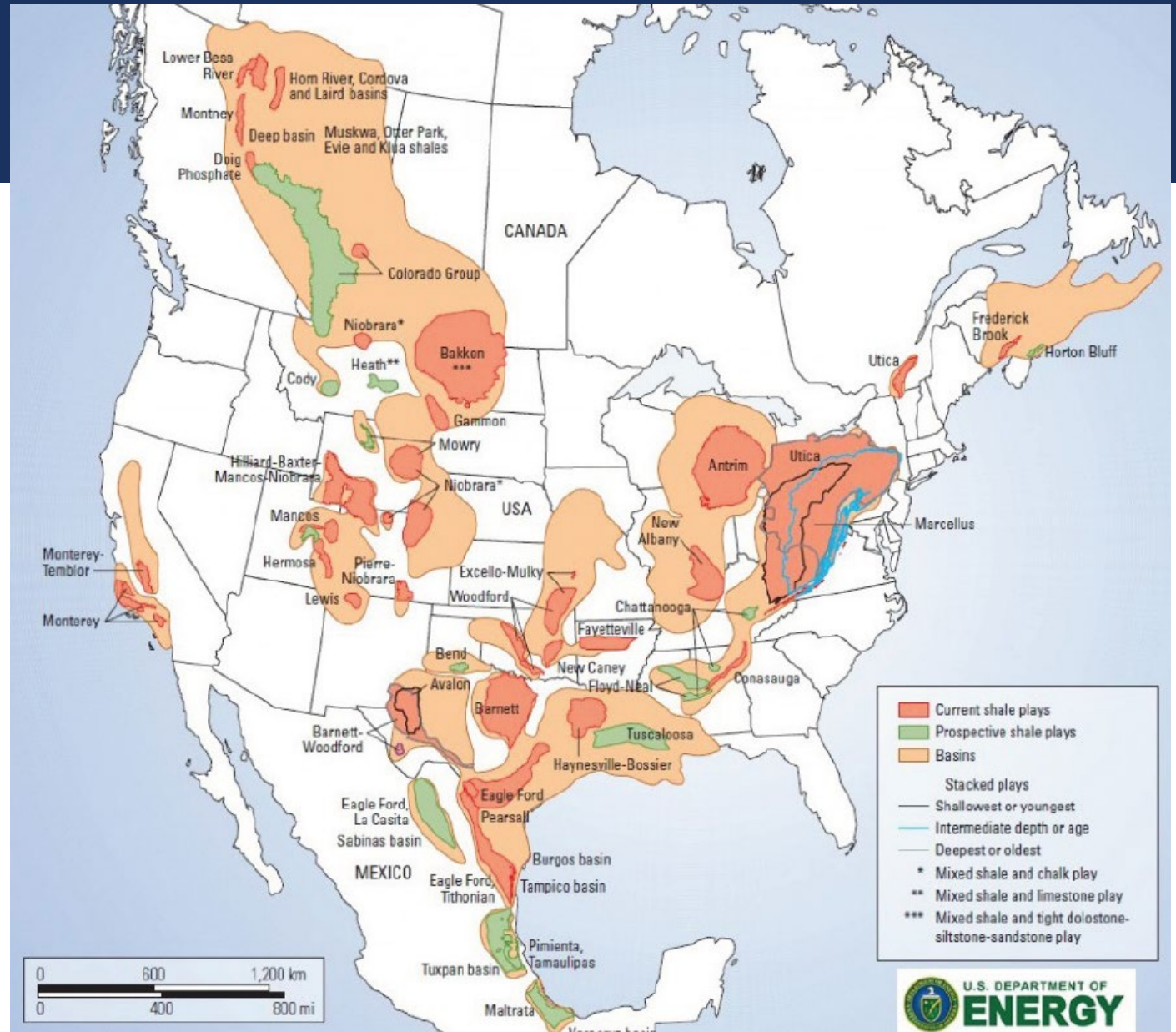
- Renewable Natural Gas
- Hydrogen

# NATURAL GAS SUPPLIES

## Where Does "Our" Gas Come From?

- Canadian gas supply (~90%)
  - British Columbia
  - Alberta
- Rockies' gas supply (~10%)
  - Wyoming, Colorado, Utah etc.
- Access to supply somewhat dependent upon available transport capacity

- North American gas plays



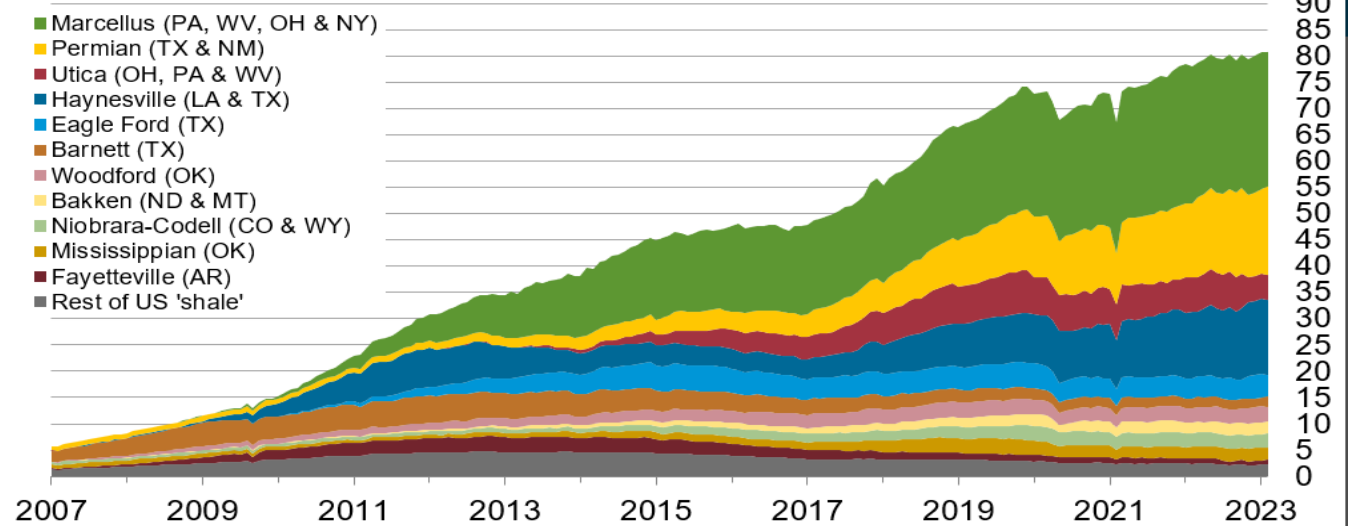
# NATURAL GAS SUPPLIES

## Gas Supply Forecast - Observations

- Robust increase in shale gas production
- Mature basins (WCSB, gulf on & offshore)
- Today: ample supply vs demand

# NATURAL GAS PRODUCTION BY PLAY 2007-2023

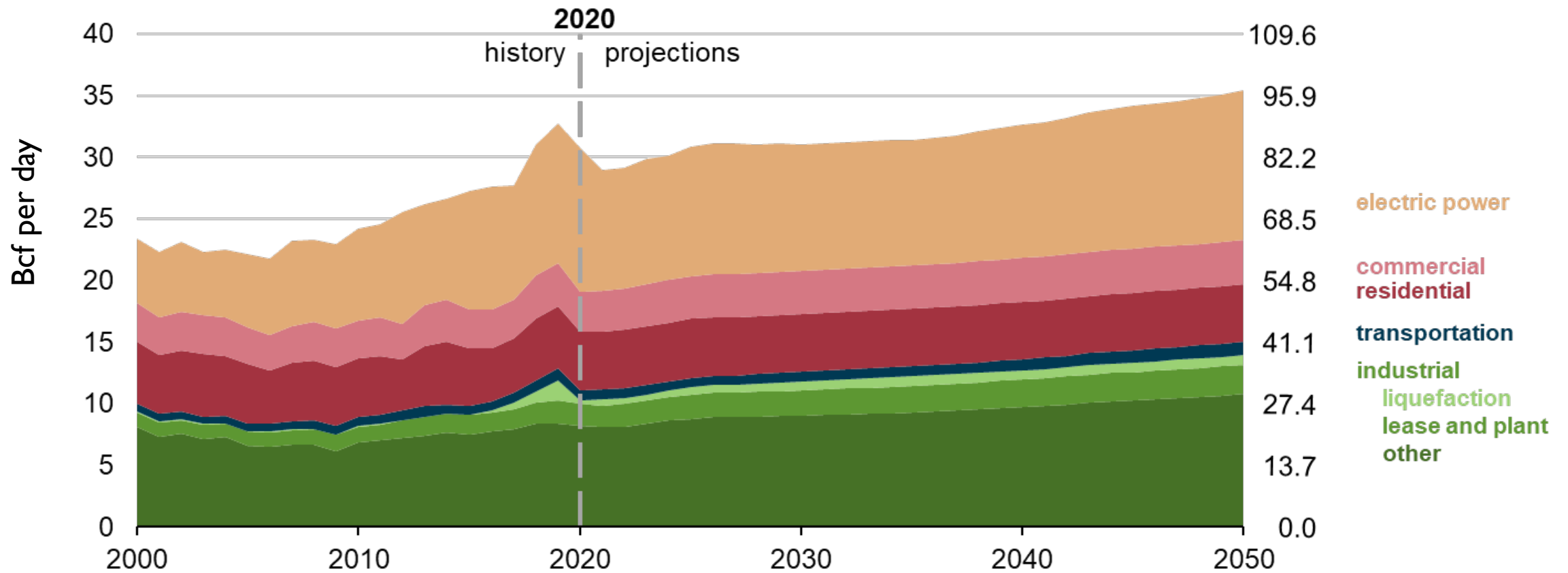
**Monthly dry shale gas production**  
billion cubic feet per day



Data source: Enverus state administrative data. Data are through March 2023 and represent EIA's official tight gas estimates but are not survey data. State abbreviations indicate primary state(s).

Note: Improvements to play identification methods have altered production volumes of various plays.

# U.S. NATURAL GAS CONSUMPTION BY SECTOR



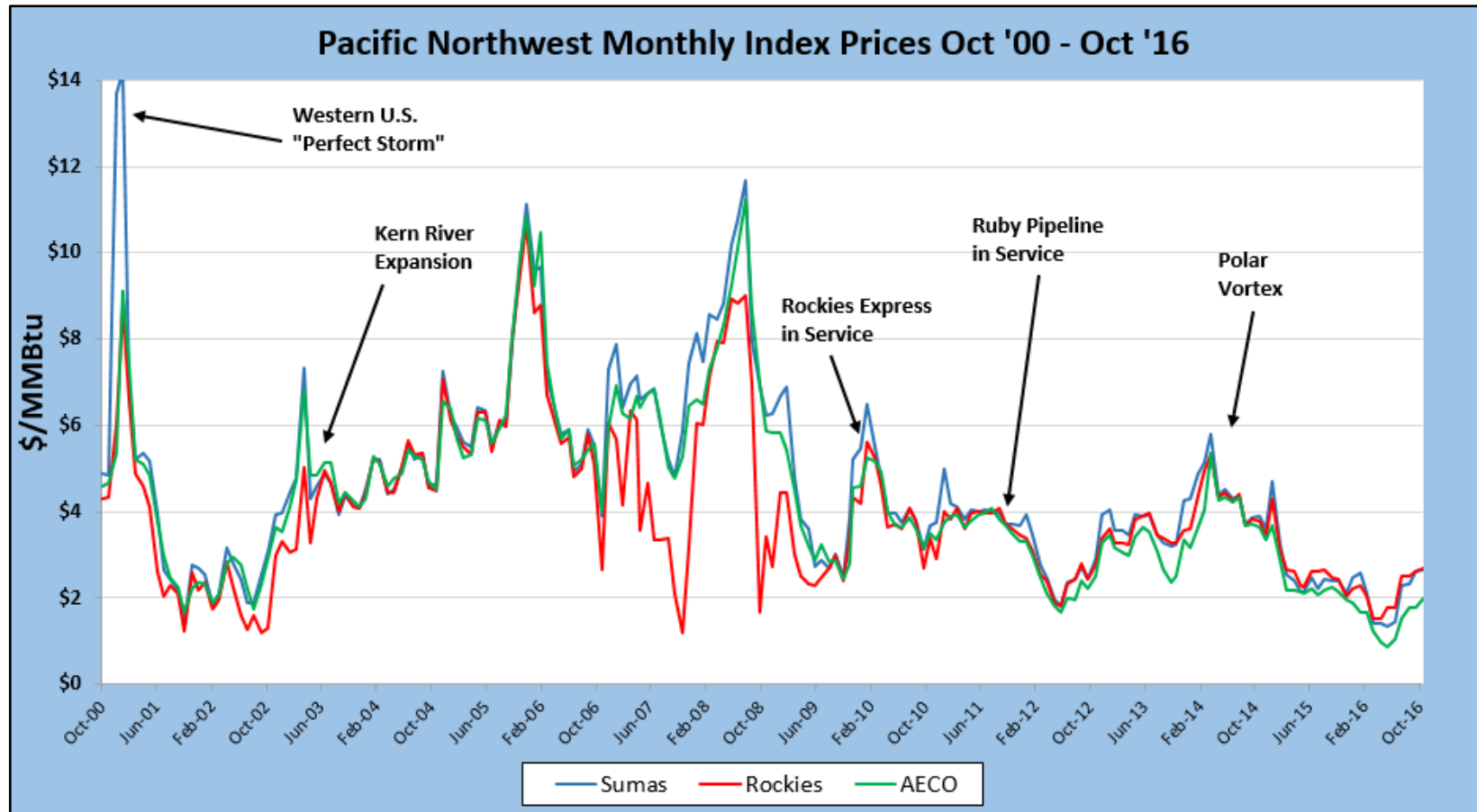
Source: EIA AEO2021

# NATURAL GAS SUPPLIES

## Gas Supply - Pricing

- Natural gas is a commodity and market is liquid
- Price follows supply and demand fundamentals
- Price history & forecast

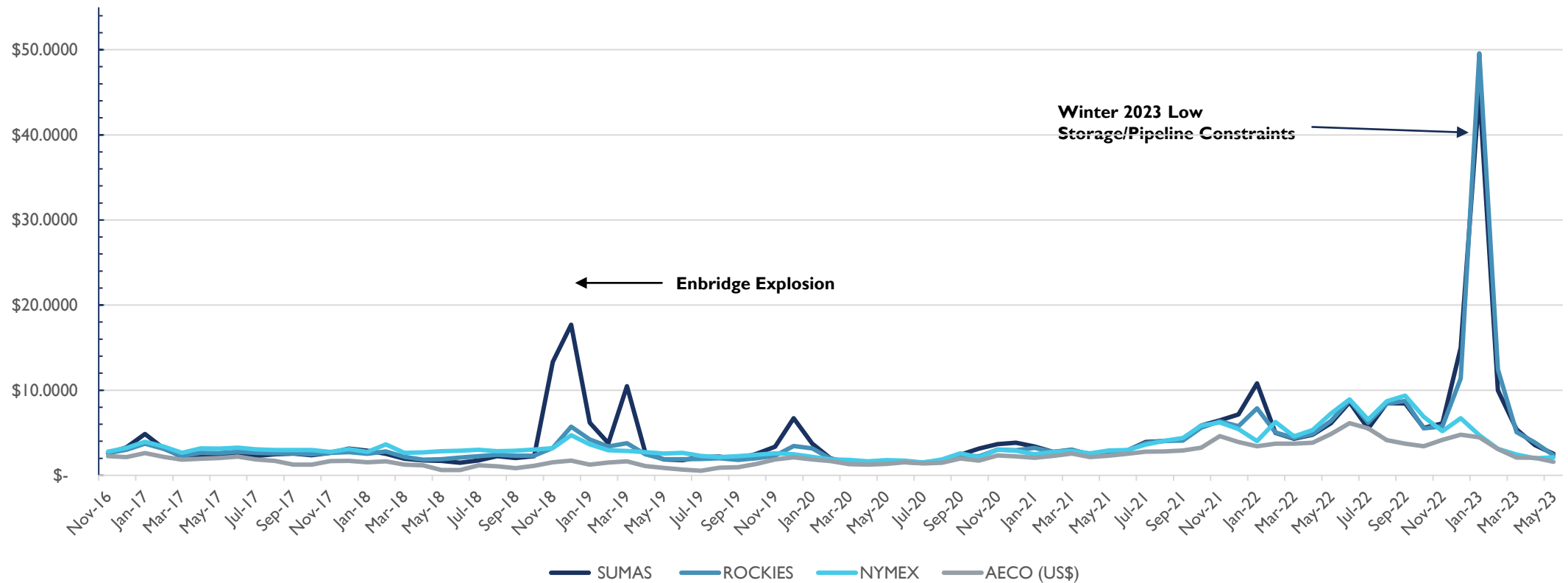
# HISTORIC GAS PRICES





# RECENT HISTORIC GAS PRICES

Historic Pricing

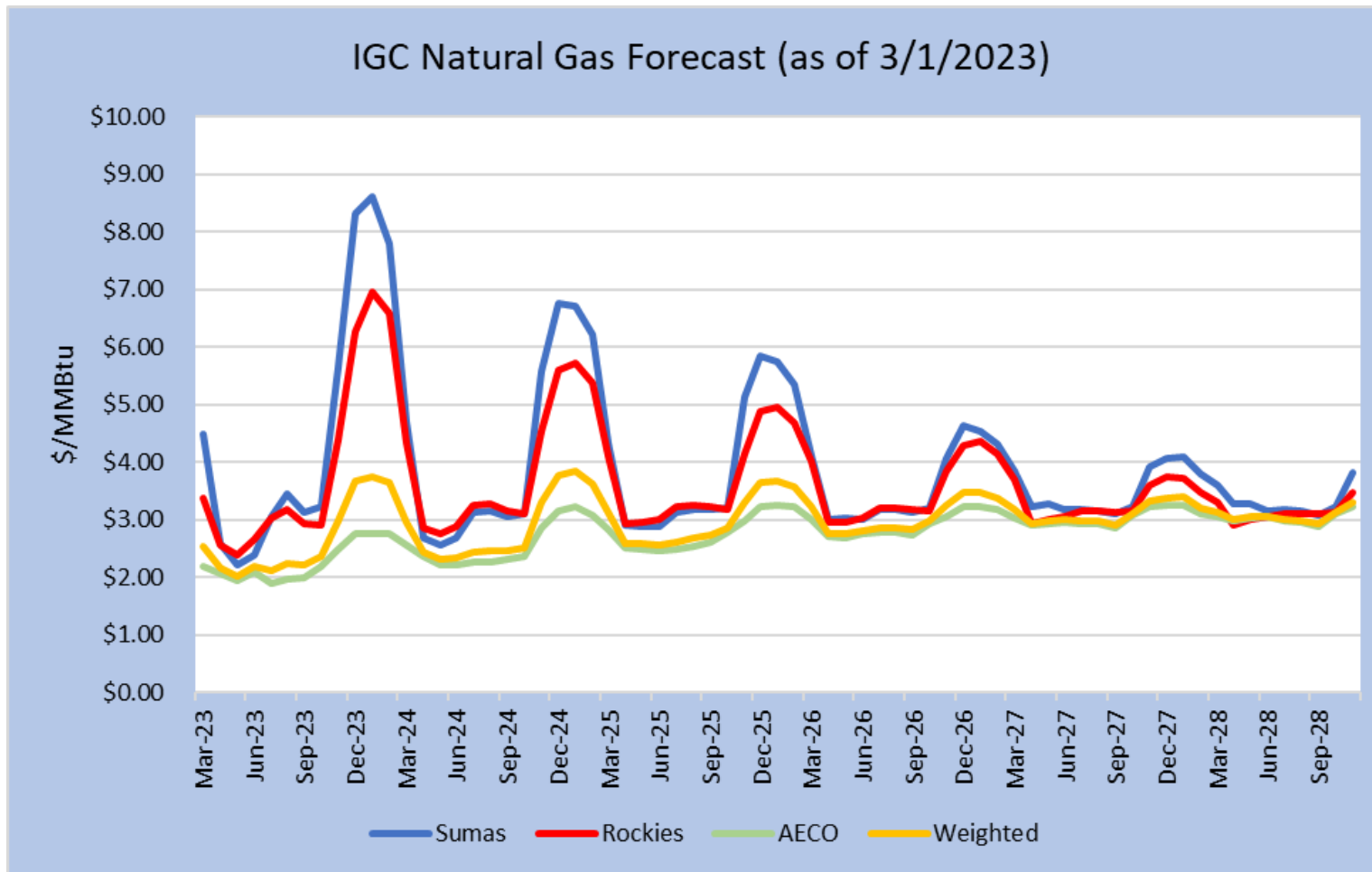


# NATURAL GAS PRICE FORECAST

## Intermountain's IRP Price Forecast

- Intermountain's long-term planning price forecast is based on a blend of current market pricing along with long-term fundamental price forecasts.
  - The fundamental forecasts include sources such as Wood Mackenzie, EIA, the Northwest Power and Conservation Council (NWPCC), Bentek and the Financial Forecast Center's long-term price forecasts.
  - Used weighted prices from the sources based on historical performance, beginning in year two of the forecast.
  - While not a guarantee of where the market will ultimately finish, Henry Hub NYMEX is 100% of the forecast for the first year as it is the most current information that provides some direction as to future market prices.
- Intermountain is gathering Renewable Natural Gas information and plans to model RNG as a potential resource in the upstream optimization process.

# INTERMOUNTAIN'S IRP PRICE FORECAST



Preliminary  
Weights:  
Sumas – 10%  
Rockies – 10%  
AECO – 80%



# **INTERMOUNTAIN GAS COMPANY**

## **2023-28 INTEGRATED RESOURCE PLAN**

*INTERSTATE TRANSPORTATION AND STORAGE RESOURCES*



## INTERSTATE TRANSPORTATION AND STORAGE RESOURCES

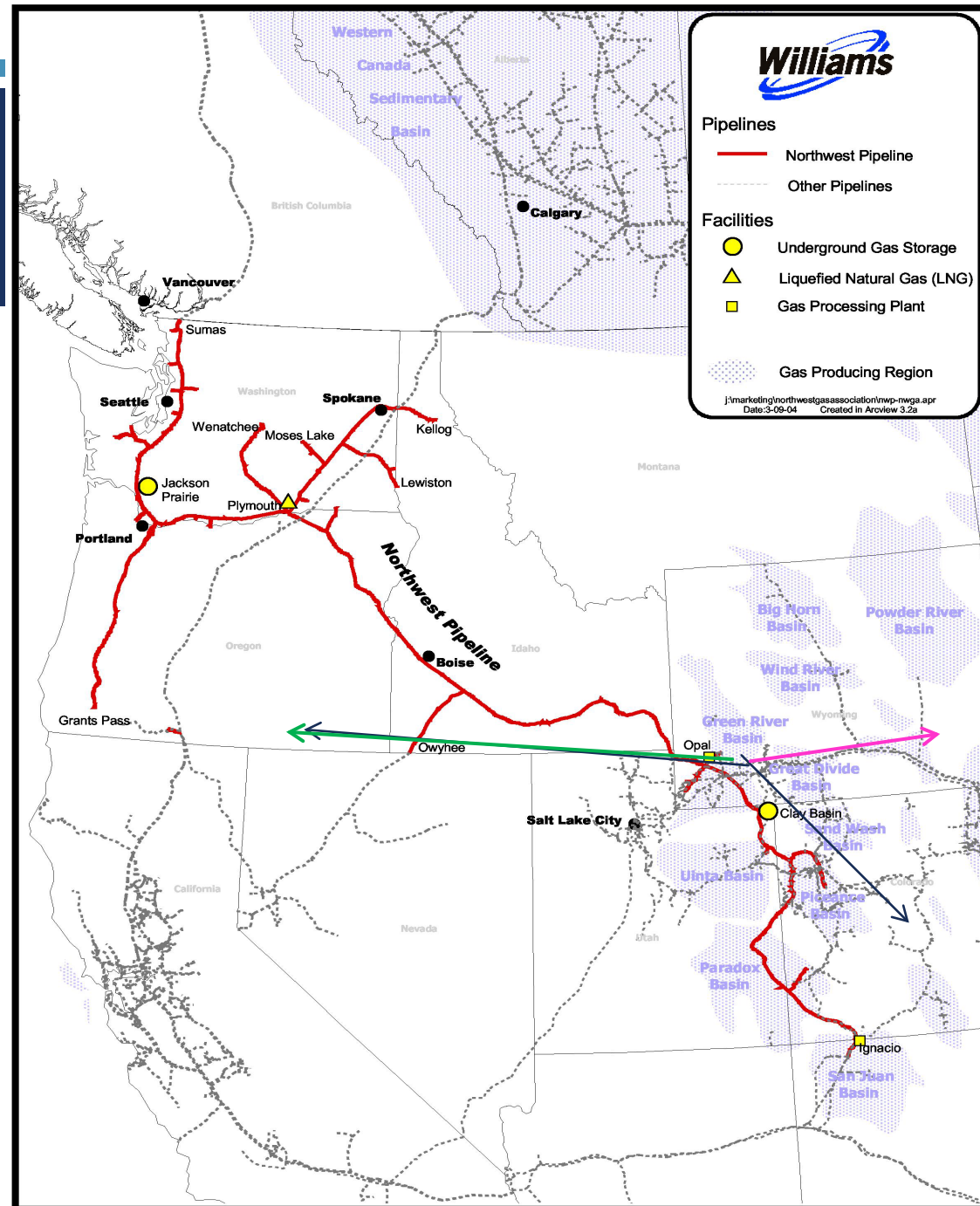
- Intermountain holds firm, long-term contracts for interstate capacity on four (4) pipelines - two U.S. and two Canadian
- All gas directly delivered to Intermountain comes through the Williams Northwest system
- Firm capacity on Northwest is determined at both receipt and delivery points

# INTERSTATE TRANSPORTATION AND STORAGE RESOURCES

## Interstate Transportation Capacity – cont.

- Delivery to Intermountain Service Territory
  - Firm Capacity Held Directly by Intermountain
  - City Gate Delivery Direct from Suppliers
- Capacity Segmentation
- Capacity Release and Mitigation for Intermountain
- Market forces drive new capacity projects

# NORTHWEST PIPELINE, GTN, NOVA AND FOOTHILLS



# CAPACITY RESOURCES

## Northwest Daily Maximum Transportation Capacity (MMBtu)

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Sumas (3k is winter only)	0	0	0	0	0	0
Stanfield	221,565	221,565	221,565	221,565	221,565	221,565
Rockies	106,478	106,478	106,478	59,328	59,328	59,328
Citygate	10,000	10,000	10,000	-	-	-
<b>Total Capacity</b>	<b>338,043</b>	<b>338,043</b>	<b>338,043</b>	<b>280,893</b>	<b>280,893</b>	<b>280,893</b>
<b>Storage Withdrawals with Bundled Capacity</b>	<b>185,512</b>	<b>185,512</b>	<b>185,512</b>	<b>155,175</b>	<b>155,175</b>	<b>155,175</b>
<b>Maximum Deliverability</b>	<b>523,555</b>	<b>523,555</b>	<b>523,555</b>	<b>436,068</b>	<b>436,068</b>	<b>436,068</b>



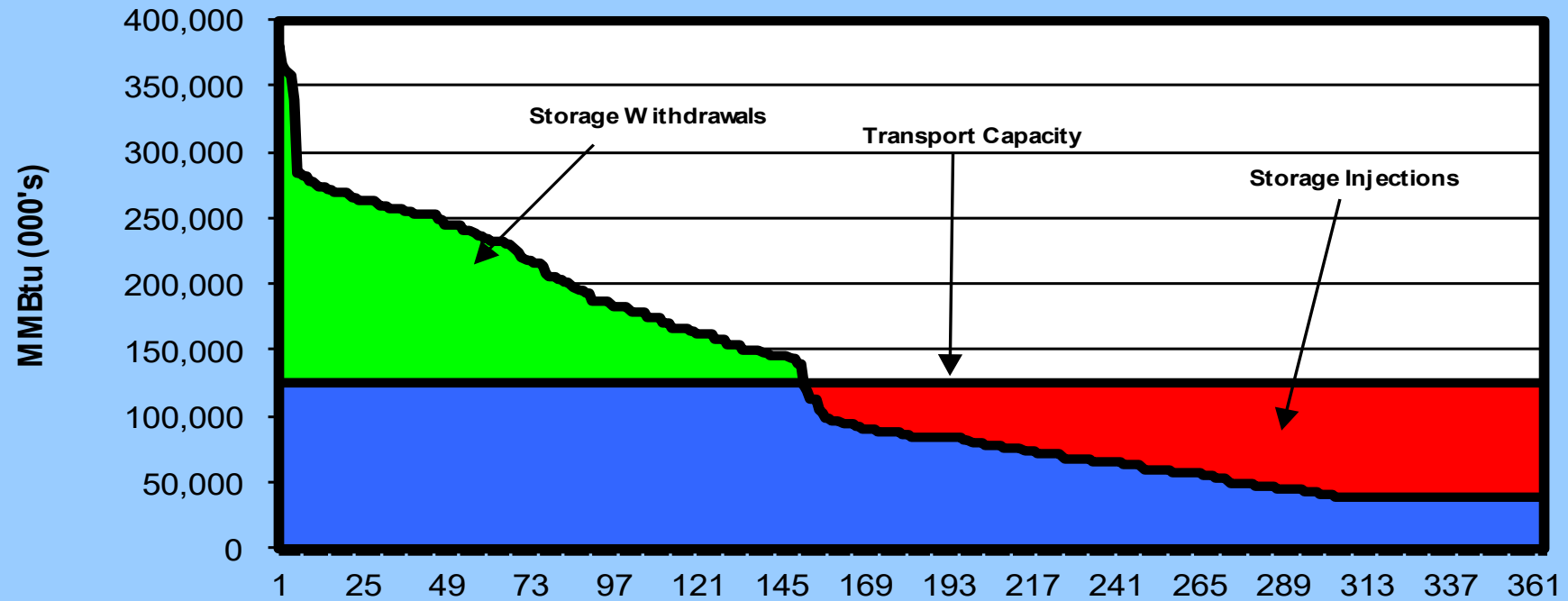
# STORAGE RESOURCES

- What is storage?
  - Natural or man-made structures where natural gas can be injected and stored for later retrieval
  - Gas is normally injected during periods of lower demand and lower prices
  - Gas is usually withdrawn during periods of higher demand and higher prices

# STORAGE RESOURCES

- Why do we need storage?
  - Demand curve is *not* linear
  - Annual supply curve somewhat linear
  - Transport capacity is very linear
  - Not feasible to meet peak demand with only interstate capacity and must-take gas purchases alone
  - Storage enhances winter/peak delivery capability and minimizes costs by balancing flat supply with seasonal demands

Example Load Duration Curve  
With Only Storage and Gas Supply



# STORAGE RESOURCES

- Uses

- “Needle” peaking
- Winter baseload
- Day-to-day load balancing
- Natural gas price hedge
- System integrity/emergency issues

- Types

- Liquefied Storage (LNG)
- Underground

# STORAGE RESOURCES

## Liquefied Storage Characteristics

- Natural gas is liquefied @ minus 260° F
- Liquid occupies 1/600 volume of vapor
- Nearly pure methane, non-corrosive, non-toxic and yes, SAFE
- High regasification/withdrawal capability
- Ideal for needle peaking, system balancing and system integrity issues

# STORAGE RESOURCES

## Liquefied Storage Characteristics

- Liquefaction is slow which limits ability to cycle inventory
- Liquefaction is energy intensive → high cycling and inventory cost
- Generally stored in above-ground tanks
- No methane is released into the atmosphere

# PLYMOUTH LNG FACILITY



# STORAGE RESOURCES

## Underground Storage Characteristics

- Gas is injected under pressure into developed salt domes, depleted well structures, underground aquifers or other porous geological formations
- Maximum daily withdrawal less than liquid storage; operating capability is dependent upon inventory level and pressure
- Injections comparatively faster and cycling costs are lower than liquid storage; multiple inventory cycles can enhance cost effectiveness

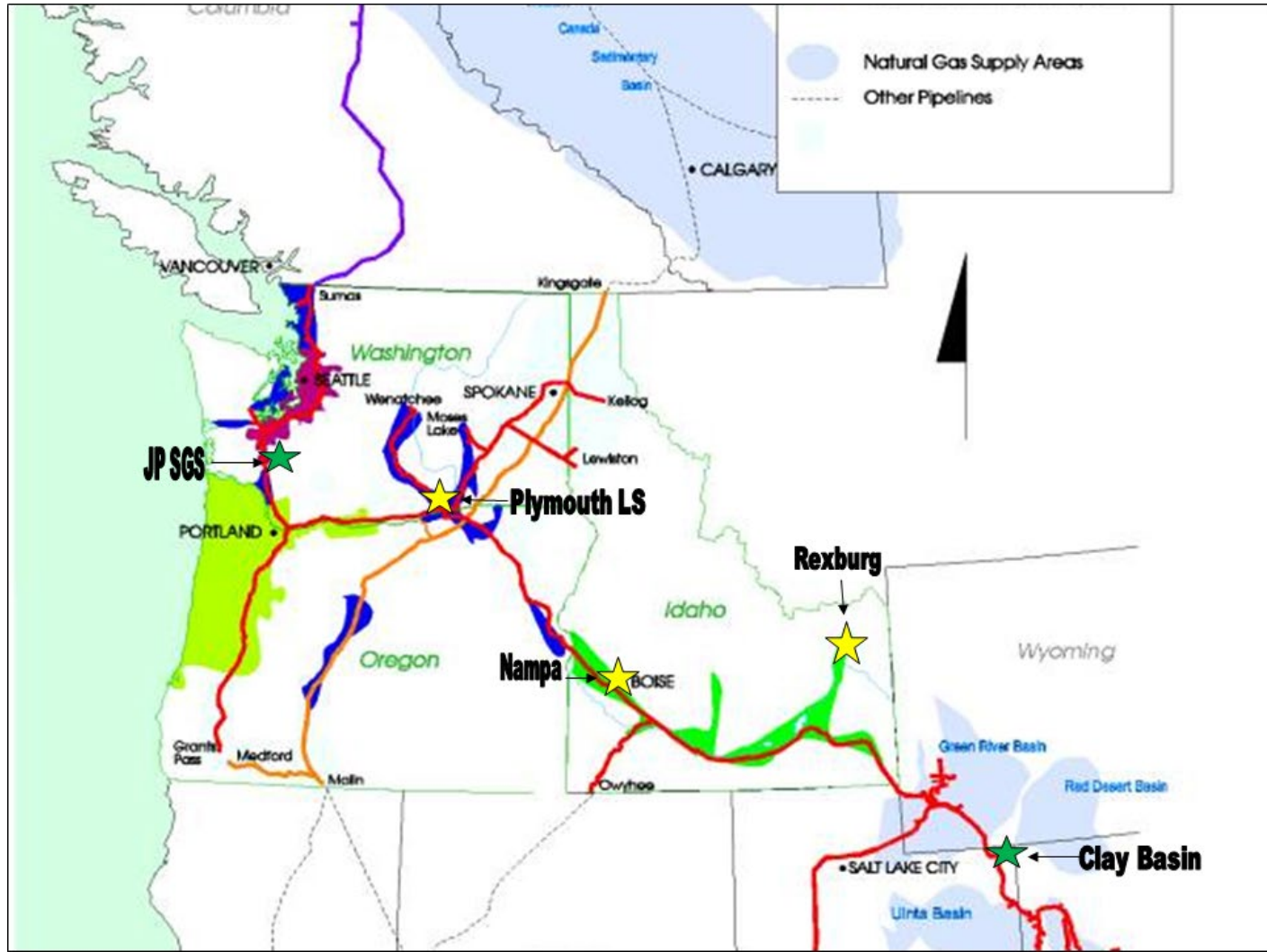


# STORAGE RESOURCES

## Location & Type of Storage used by Intermountain

- Nampa, ID LNG – liquid (Intermountain)
- Plymouth, WA LNG – (Northwest Pipeline)
- Rexburg, ID Satellite LNG (Intermountain)
- Jackson Prairie - underground aquifer in western WA (Northwest Pipeline)
- Clay Basin - underground depleted well reservoir in NE Utah (Questar Pipeline)

# STORAGE RESOURCES - LOCATIONS

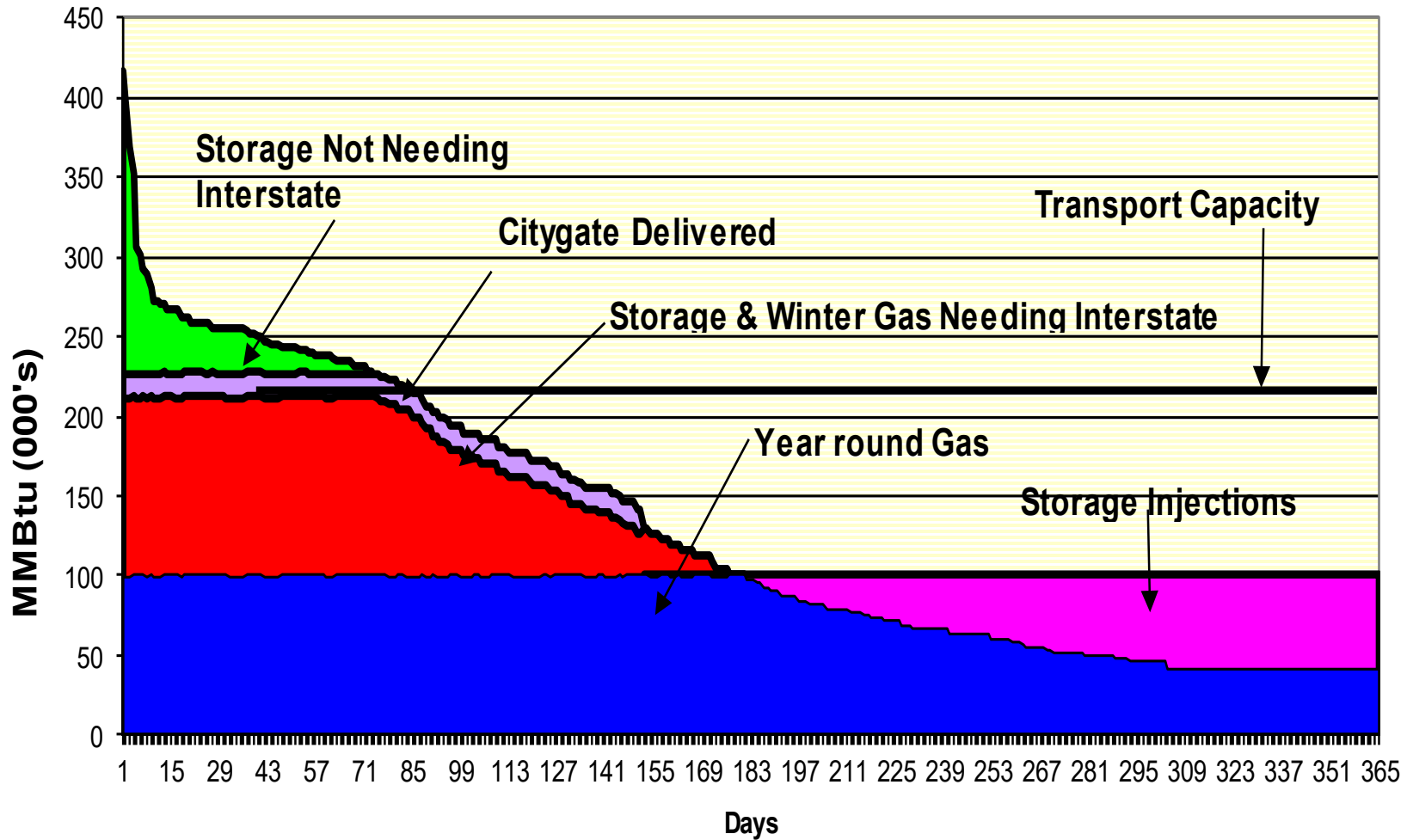


# STORAGE RESOURCES

## Intermountain's 2023/24 Storage Statistics (MMBtu)

<u>Facility</u>	<u>Seasonal Capacity</u>	<u>% of Nov-Mar</u>	<u>Daily Withdrawal</u>		<u>Daily Injection</u>		<u>Redelivery Capacity</u>
			<u>Maximum</u>	<u>% of Peak</u>	<u>Max Vol</u>	<u># of Days</u>	
<b>Nampa</b>	600,000	1%	60,000	16%	3,500	166	<i>None</i>
<b>Plymouth*</b>	1,475,135	4%	155,175	43%	12,500	213	<b>TF-2</b>
<b>Jackson Prairie</b>	1,092,099	3%	30,337	8%	30,337	36	<b>TF-2</b>
<b>Clay Basin</b>	8,413,500	20%	70,114	19%	70,114	120	<b>TF-1</b>
<b>Grand Total</b>	<b><u>11,580,734</u></b>	<b><u>28%</u></b>	<b><u>315,626</u></b>	<b><u>86%</u></b>	<b><u>116,451</u></b>		

## Sample LDC with Efficient Mix of All Supply Resources





**QUESTIONS?**

# FEEDBACK SUBMISSIONS



- [IRP.Comments@intgas.com](mailto:IRP.Comments@intgas.com)
- Please provide comments and feedback within 10 days

# THIRD MEETING

## **August 2, 2023, 9:00 a.m. - Noon**

- Potential Capacity Enhancements
- Resource Optimization
- Planning Results
- Remaining IRP Process