Intermountain Gas Company

Integrated Resource Plan
2019 – 2023

INTERMOUNTAIN®
GAS COMPANY
A Subsidiary of MDU Resources Group, Inc.

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UTILITIES COMMISSION

Fall 2019
Book 1 of 2
Exhibits 1 - 3

Table of Contents

Book 1 of 2

Intermountain Gas Company

IGRAC Committee Member Invitations/Listing
Integrated Resource Plan 2019 – 2023

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Exhibit No. 1
Section A
Fall 2019

July 11, 2018

Name
Company/Organization
Address
City, State Zip

Dear Name,

Intermountain Gas Company is in the process of establishing an Integrated Resource Plan (IRP) advisory committee, and you are invited to become a contributing member. Intermountain's IRP is a five-year forecast plan filed every two years with the Idaho Public Utilities Commission that details how Intermountain will meet our customers' demand for natural gas over the forecast period.

During committee meetings, Intermountain Gas Company employees will present, in detail, each step of the planning process that creates the Company's outlook for supply and demand on its distribution system. Committee members will have the opportunity to review the entire process, ask questions and provide input to help facilitate a thorough plan.

There will be several meetings during the development of Intermountain Gas Company's 2019 IRP. Meetings will be held at various locations across Idaho. More details about upcoming meetings will be provided at a future date to committee members that RSVP.

Please respond with your interest in becoming a committee member to Raycee White at 208-377-6046 or email to 2019IRP.Comments@intgas.com, no later than Friday, August 31st, 2018.

Sincerely,

Eric Wood
Gas Supply Supervisor
Cascade Natural Gas
Intermountain Gas Company

Intermountain Gas Resource Advisory Committee Members

Name	Company/Organization
John Chatburn	Idaho Office of Energy Resources
Dave Allred	Northwest Pipeline-Williams
Randy Thomas	Amy's Kitchen
Dana Kirkham	REDI of Eastern Idaho
Kit Kamo	Snake River Economic Development Alliance
Tina Wilson	Western Alliance For Economic Development
Connie Stopher	SEIDO (Southern Idaho Economic Development Organization)
Steve Fultz	Caldwell Economic Development
Beth Ineck	Nampa Economic Development
Matt Hunter	Pocatello/Chubbuck Chamber of Commerce
Ethan Mansfield	Boise Valley Economic Partnership
Scott Reese	Bingham County Economic Development
Mike Morrison	Idaho Public Utilities Commission
Kevin Keyt	Idaho Public Utilities Commission
Stacey Donohue	Idaho Public Utilities Commission
Yao Yin	Idaho Public Utilities Commission
Johan Kalala-Kasanda	Idaho Public Utilities Commission

Region	Members
Western	10
Central	1
Eastern	4
N/A	2
Total	17

Intermountain Gas Company

Boise, Twin Falls, Idaho Falls Advisory Committee
Meeting Invitation Letter, Sign In Sheet and Agenda
Integrated Resource Plan 2019 – 2023

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Exhibit No. 1
Section B
Fall 2019

September 7, 2018

Name
Company/Organization
Address
City, State Zip

Dear Name,

Thank you for accepting a position on Intermountain Gas Company's Integrated Resource Plan ("IRP") Advisory Committee. Intermountain's first IRP advisory committee meeting is scheduled for October 12th, 2018 in our Conference Center located on our campus at 555 S. Cole Road, Boise, ID. The meeting will be held from 10am – 12pm with a luncheon and guest speaker to follow.

At this meeting, Intermountain Gas Company employees will present, and listen to suggestions regarding, the following topics:

- Explain the overall IRP process.
- A high-level review of the Company's last Integrated Resource Plan.
- Define the focused geographic areas of the IRP, otherwise known as "Areas of Interest".
- Explain the process in establishing the IRP's customer growth, weather, and usage per customer.

Please RSVP by contacting Raycee White at 208-377-6046, or email to 2019IRP.Comments@intgas.com, no later than Friday, September 21st, 2018.

Should you choose not to travel to attend, the meeting materials will be provided to you after the meeting for your review and any feedback you may have regarding the materials.

Sincerely,

Eric Wood
Gas Supply Supervisor
Cascade Natural Gas
Intermountain Gas Company

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SIGN IN SHEET

Boise IRP Meeting

Date: October 12, 2018

Location: Intermountain Gas Offices at 555 S. Cole Rd, Boise

Name	Company Name	E-Mail
Connie Stephan	SIEDO	Connies@SouthernIdaho.org
John Chatburn	OEMR	John.Chatburn@oer.idaho.gov
Tina Wilson	Western Alliance for Econ Dev	tina@westernallianceed.org
Kit Kama	Snake River EDA	KKama@tvcc.cc
KEVIN KEYT	IPUC	KEVIN.KEYT@PUC.IDAHO.GOV
Mike Morrison	IPUC	mike.morrison@puc.idaho.gov.
Stacey Donohue	IPUC	stacey.donohue@puc.idaho.gov
Yao Yin	IPUC	yao.yin@puc.idaho.gov
Jehan Kalala-Kasanda	IPUC	jehan.kalala-kasanda@puc.idaho.gov
Dave Allred	Northwest Pipeline	david.S.Allred@Williams.com
David Swenson	IGC	
Russ Nishikawa	IGC	russ.nishikawa@intgas.com
Jacob Dawson	IGC	
MARI HUNTER	POCATELLO CHAMBER	MHUNTER@POCATELLOIDAHO.COM
Cheryl Imlach	IGC	
LORI BLATTNER	IGC	
MIKE MCGRATH	IGC	MIKE.MCGRATH6@GMAIL.COM
DAN KIRSCHNER	NWGA	
Randy Thomas	Amy's Kitchen	Unable to Attend
Beth Inecki	Nampa Economic Development	Unable to Attend
Ethan Mansfield	BVEP	Unable to Attend
Scott Reese	Bingham Cty Economic Dev.	Unable to Attend
Dana Kirkham	REDI of Eastern Idaho	Unable to Attend
Steve Fultz	Caldwell Economic Dev	Unable to Attend

INTERMOUNTAIN® GAS COMPANY
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AGENDA

Intermountain Gas Resource Advisory Committee (IGRAC) Meeting

October 12, 2018
10:00 am – 1:00 pm

Welcome, Guest Safety & Introductions — **10:00 am**
Mike McGrath
Director – Regulatory Affairs

IRP Purpose & Requirements — **10:05 am**
Mike McGrath
Director – Regulatory Affairs

System Overview — **10:15 am**
Eric Wood
Supervisor, Gas Supply

Residential & Commercial Customer Growth — **10:30 am**
Cheryl Imlach
Manager, Energy Utilization

Design Heating Degree Days — **10:45 am**
Lori Blattner
Manager, Energy Efficiency & Regulatory Processes

Design Residential and Commercial Usage Per Customer — **11:15 am**
Russ Nishikawa
Manager, Engineering Services

Questions/Discussion — **11:30 am**

Lunch Presentation — **11:45 am**
Dan Kirschner
Executive Director, Northwest Gas Association

Additional Instructions:
Feedback is welcomed and encouraged. Please provide feedback on a Comment Card or email us at 2019IRP.Comments@intgas.com. We ask that comments and feedback are received within 10 days following the meeting, so that it can be considered in the development of the Integrated Resource Plan (IRP).

November 28, 2018

Name
Company/Organization
Address
City, State Zip

Dear Name,

Intermountain's second IRP advisory committee meeting is scheduled for December 4th, 2018 in our Twin Falls District Office located at 451 Alan Drive, Jerome, ID. The meeting will be held from 10am – 12pm with a luncheon and guest speaker, Idaho Economist, John Church, to follow.

At this meeting, Intermountain Gas Company employees will present, and listen to suggestions regarding, the following topics:

- Core Market Customer Forecasts
- Industrial Market Customer Forecasts
- Non-Traditional Resources

The Twin Falls District Office has limited parking available in front of the building for visitors. We ask that you park in the cul-de-sac or along Alan Drive. Please see the attached map as a reference where parking is highlighted in yellow.

Please RSVP by contacting Raycee White at 208-377-6046, or email to 2019IRP.Comments@intgas.com, no later than Monday, November 30th, 2018.

Should you choose not to travel to attend, the meeting materials will be provided to you after the meeting for your review and any feedback you may have regarding the materials.

Sincerely,

Eric Wood
Gas Supply Supervisor
Cascade Natural Gas
Intermountain Gas Company

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SIGN IN SHEET

Twin Falls IRP Meeting

Date: December 4th, 2018

Location: Twin Falls District Office 451 Alan Drive, Jerome, ID

Name	Company Name	E-Mail
KEVIN KEYT	IPUC	ON FILE
Michael W. Morrison	IPUC	"
Stacey Donohue	IPUC	stacey.donohue@puc.idaho.gov
John Church	Idaho Economics	jchurchideecon@gmail.com
Cheryl Imlach	I.G.C.	cheryl.imlach@intgas.com
Russ Nishikawa	IGC	russ.nishikawa@intgas.com
AL Lowe	Pacific Ethanol	alowe@pacificethanol.com
Tina Wilson	Western Alliance 4 Econ Dev	tina@westernallianceed.org
Dana Kirkham	REDI	danak@easternidaho.org
JOHAN KALALA-KASANDA	IPUC	ON FILE
MATT HUNTER	POCATELLO-CHUBBUCK CHAMBER	MHUNTER@POCATELLOIDAHO.COM
LINDA OFFERDAHL	CASCADE NATURAL GAS	LINDA.OFFERDAHL@CNGC.COM
Jacob Damington	IGC	Jacob.Damington@intgas.com
Raycee White	IGC	raycee.white@intgas.com
STACIE CAMPBELL	MCCAIN FOODS N/A	Stacie.Campbell@mccain.com
David Anderson	IMP	dlAnderson@idahomilk.us
Earl Gilmartin	Commercial Creamery	earlg@cheesepowders.com
John Chatburn	Idaho Office of Energy Resources - Unable to Attend	
Randy Thomas	Amy's Kitchen - Unable to Attend	
Kit Kramo	Snake River Eco. Dev. Alliance - Unable to Attend	
Connie Stopher	SETDO - Unable to Attend	
Beth Inech	Nampa Economic Dev. - Unable to Attend	
Ethan Manofield	BVEP - Unable to Attend	
Scott Reese	Bingham Cty Eco. Dev. - Unable to Attend	
Steve Fultz	Caldwell Eco. Dev. - Unable to Attend	

INTERMOUNTAIN® GAS COMPANY
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AGENDA

Intermountain Gas Resource Advisory Committee (IGRAC) Meeting

December 4, 2018
10:15 am – 1:00 pm

Welcome, Guest Safety & Introductions — **10:15 am**
Russ Nishikawa
Manager, Engineering Services

IRP Purpose & Requirements — **10:25 am**
Russ Nishikawa
Manager, Engineering Services

Core Market Customer Forecasts — **10:35 am**
Cheryl Imlach
Manager, Energy Utilization

Industrial Customer Forecasts — **11:10 am**
Dave Swenson
Manager, Industrial Services

Non-Traditional Resources — **11:35 am**
Russ Nishikawa
Manager, Engineering Services

Questions/Discussion — **11:55 am**

Lunch Presentation — **12:00 pm**
John Church
Economist
Idaho Economics

Additional Instructions:
Feedback is welcomed and encouraged. Please provide feedback on a Comment Card or email us at 2019IRP.Comments@intgas.com. We ask that comments and feedback are received within 10 days following the meeting, so that it can be considered in the development of the Integrated Resource Plan (IRP).

White, Raycee

From: IGC 2019 IRP Comments
Sent: Monday, June 10, 2019 8:34 AM
To:
Subject: Intermountain IRP Advisory Committee Meeting Invitation - July 17, 2019
Attachments: Borismetrics Boris Prokop Bio.pdf

Good Morning,

Intermountain Gas Company is continuing to host a series of meetings across our service territory to review aspects of the Company's Integrated Resource Plan. Our final Advisory Committee Meeting will be held:

On: **July 17th, 2019**

At: **Home2Suites by Hilton**
1160 Whitewater Drive
Idaho Falls, ID

From: **10 am – 2 pm**

Lunch will be included along with a presentation from our guest speaker, economist, Boris Prokop. For more information about our guest speaker, please reference the attached bio.

At this meeting, Intermountain Gas Company employees will present, and listen to suggestions regarding the following:

- Usage Per Customer
- Energy Efficiency
- Load Duration Curves
- Optimization and Enhancements
- Distribution System Enhancements

Please RSVP by contacting me at 208-377-6046 or responding to this email no later than Wednesday, June 26th, 2019, so we can get an accurate count for lunch.

Should you choose not to travel to attend, the meeting materials will be provided to you after the meeting for your review and any feedback you may have regarding the materials.

Sincerely,

Raycee White
Regulatory Analyst
☎ 208.377.6046
✉ 2019IRP.Comments@intgas.com

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SIGN IN SHEET

Idaho Falls IRP Meeting

Date: July 17th, 2019

Location: Home2Suites by Hilton 1160 Whitewater Drive Idaho Falls, ID

Name	Company Name	E-Mail
JJ Murphy	IGC	james.murphy@intgas.com
Brandon Lance	IGC	brandon.lance@intgas.com
Raycee White	IGC	raycee.white@intgas.com
Eric Wood	IGC	Eric.Wood@CNGC.com
R Scott Reese	Bingham County	sreese@co.bingham.id.us
Mike Morrison	Idaho Public Utilities	mike.morrison@puc.idaho.
LINDA OFFERDAHL	CASCADE NATURAL GAS	LINDA.OFFERDAHL@MDU.com
Boris Prokop	Borismetrics	boris@borismetrics.co
Kathy Wold	IGC	Kathy.wold@intgas.com
LORI BLATTNER	IGC	LORI.BLATTNER@intgas.com
Russ Nishikawa	IGC / MDU	russ.nishikawa@mdu.com
TERI TENGAIC	IGC	teri.tengaic@intgas.com
Kevin Keyt	IPUC	(call-in)
John Chatburn	Idaho Office of Energy Resources	- Unable to Attend
Dave Allred	Northwest Pipeline - Williams	
Randy Thomas	Amy's Kitchen	
Kit Kamo	Snake River Econ. Devp. Alliance	
Tina Wilson	Western Alliance for Econ. Devp.	
Connie Stopher	SEIDO	
Beth Ineck	Nampa Econ. Devp.	
Matt Hunter	Pocatello / Chubb. Chamber of Commerce	
Teresa White	BEDI	
Steve Fultz	Caldwell Econ. Devp.	

INTERMOUNTAIN® GAS COMPANY
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AGENDA

Intermountain Gas Resource Advisory Committee (IGRAC) Meeting

July 17, 2019
10:00 am – 2:00 pm

Welcome, Guest Safety & Introductions — **10:00 am**
Lori Blattner
Director, Regulatory Affairs

IRP Purpose & Requirements — **10:15 am**
Lori Blattner
Director, Regulatory Affairs

Energy Efficiency Results — **10:25 am**
Kathy Wold
Manager, Energy Efficiency

Load Demand Curves — **10:55 am**
Eric Wood
Supervisor, Gas Supply

Lunch Presentation — **11:30 pm**
Boris Prokup
Economist
Borismetrics

Distribution System Enhancements — **12:30 pm**
Russ Nishikawa, P.E.
Manager, Engineering Services

Supply Equals Demand — **12:50 pm**
Eric Wood
Supervisor, Gas Supply

Additional Instructions:
Feedback is welcomed and encouraged. Please provide feedback on a Comment Card or email us at 2019IRP.Comments@intgas.com. We ask that comments and feedback are received within 10 days following the meeting, so that it can be considered in the development of the Integrated Resource Plan (IRP).

Intermountain Gas Company

Boise, Twin Falls, Idaho Falls
Advisory Committee Meeting Presentations
Integrated Resource Plan 2019 – 2023

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Exhibit No. 1
Section C
Fall 2019

INTERMOUNTAIN® GAS COMPANY

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INTEGRATED RESOURCE PLAN PROCESS OVERVIEW

OCTOBER 12, 2018 INTERMOUNTAIN GAS RESOURCE ADVISORY COMMITTEE (IGRAC)

1

WELCOME

- Guest Safety & Comfort
- Introductions

2

IRP TEAM

- Mike McGrath – *Director, Regulatory Affairs*
- Eric Wood – *Supervisor, Gas Supply*
- Russ Nishikawa – *Manager, Engineering Services*
- Lori Blattner – *Manager, Energy Efficiency and Regulatory Processes*
- Dave Swenson – *Manager, Industrial Services*
- Cheryl Imlach – *Manager, Energy Utilization*
- Raycee White – *Regulatory Analyst*

3

AGENDA

- **Welcome, Guest Safety & Introductions** - *Mike McGrath*
- **IRP Purpose and Requirements for 2019** - *Mike McGrath*
- **System Overview** - *Eric Wood*
- **Residential & Commercial Customer Growth** - *Cheryl Imlach*
- **Design Heating Degree Days** - *Lori Blattner*
- **Design Residential & Commercial Usage Per Customer** - *Russ Nishikawa*
- **Questions/Discussion**
- **Lunch Presentation** - *Dan Kirschner, Executive Director, Northwest Gas Association*

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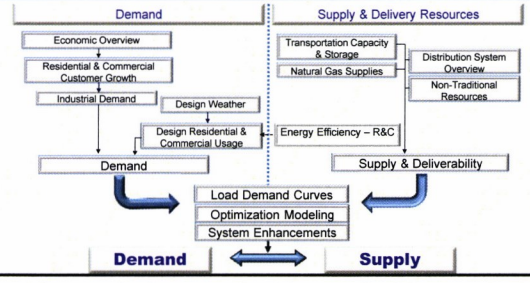
INTERMOUNTAIN GAS COMPANY

- **Components of the Integrated Resource Plan, or IRP, Process**

5

THE IRP PROCESS



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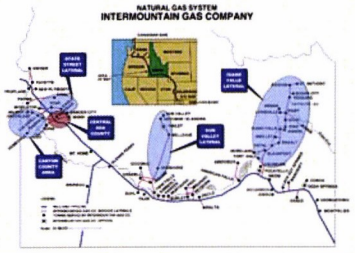
AREAS OF INTEREST (AOI)

- 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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BENEFITS OF AN IRP

- Blueprint to meet the Company's firm customer demands over a five-year forecast period based on various assumptions
- Provides frequent updates to the projected growth on the Company's system
- Considers all available resources to meet the needs of the Company's customers on a consistent and comparable basis
- Helps to ensure Intermountain Gas Company will continue to provide reliable energy service while minimizing costs

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SCENARIO DEFINITIONS

ECONOMIC OUTLOOK - GROWTH

WEATHER

9

INTERMOUNTAIN'S 2017 IRP

- Intermountain's distribution system can deliver uninterrupted natural gas supplies to its firm customers throughout the IRP five-year planning horizon
- All "Areas of Interest" were individually determined to have adequate natural gas delivery capability to serve customers during "design" cold day temperatures

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2017 IRP AND IDAHO PUBLIC UTILITIES COMMISSION ACKNOWLEDGEMENT LETTER

- Final Order No. 33997 – Commission Accepted Intermountain's 2017 IRP Filing
- Commission Staff Recommendations:
  - Establish an IRP Advisory Committee
    - Provide Feedback
    - Suggest Improvements to the Plan
  - Strengthen Narrative Throughout the IRP
  - Strengthen Explanation of Modeling/Analysis Process
  - More Thoroughly Explain DSM Analysis to Illustrate All Opportunities Considered

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FEEDBACK SUBMISSIONS

Comment Card

- Comment Cards
- 2019IRP.Comments@intgas.com
- Please provide comments and feedback within 10 days

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SYSTEM OVERVIEW

ERIC WOOD
SUPERVISOR, GAS SUPPLY

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INTERMOUNTAIN GAS COMPANY

- Intermountain Gas Company is a natural gas local distribution company, founded in 1950 and served its first customer in 1956
- Provides service to 74 communities across southern Idaho
- 350,000+ customers
- Delivered over 730 million therms in 2017

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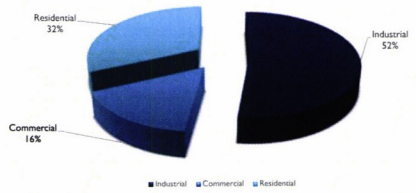
THROUGHPUT BY CUSTOMER CLASS



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INTERMOUNTAIN GAS COMPANY DISTRIBUTION SYSTEM

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REGIONAL PIPELINES

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RESIDENTIAL AND COMMERCIAL CUSTOMER GROWTH

CHERYL IMLACH
MANAGER, ENERGY UTILIZATION

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FORECASTING COMPONENTS

- Economic Forecast – State of Idaho
  - Household Growth Rate by County
- Market Penetration Rate by AOI
- Community Planning Association (COMPASS) Traffic Analysis Zones (TAZ)
- 'Boots-on-the-Ground" Observations/Feedback

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ECONOMIC FORECAST – STATE OF IDAHO

- Provides County by County Projections for Wages, Employment, Population, and Households
- Utilizes Two Methods for Population Projections
  - A Forecast of Annual Births vs Deaths
  - Econometric Model Which Forecasts Population Growth as a Function of Economic Activity
- 3 Diverse Scenarios
  - Comparison and Reconciliation

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FORECAST SCENARIOS AND ASSUMPTIONS

Baseline
- Idaho continues to outpace 'natural growth'
- Assumes Idaho continues to be attractive to in-migration of new business
- Forecasts trajectory based on assumptions juxtaposed with normal business cycle

High Growth
- Assumes more attractive business environment for manufacturing firms, food processing & machinery/fabrication industry
- Strong employment gains statewide
- Higher Population Growth and Higher Employment Levels
- Higher Rate of Household Creation than Baseline

Low Growth
- Assumes manufacturing does not recover from recession
- Assumes accelerated job loss in food processing, dairy and associated industries
- In-migration is curtailed due to lack of employment opportunities

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MARKET PENETRATION RATE

New Residential Construction
- Household Growth → New Homes → New Gas Customers

Existing Residential Conversion
- Computed as a Function of New Residential Customers

Small Commercial Customers
- Computed as a Function of New Residential Customers

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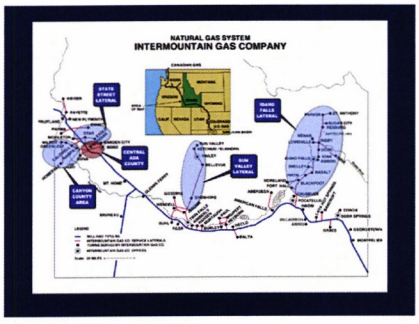
AOI GROWTH RATE



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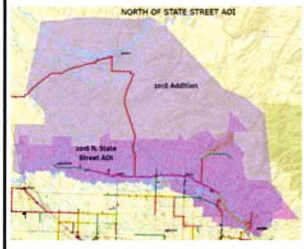

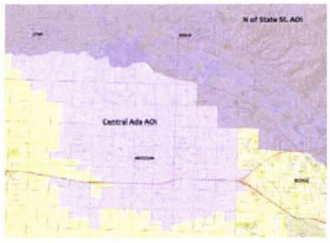

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AOI
GROWTH
RATE

STATE ST
CENTRAL ADA

Community Planning Association (COMPASS)
Communities In Motion (CIM) 2040

- GIS Polygons of AOI's
- Current Customer Count Extract
- Traffic Analysis Zones Annual Growth Allocation

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CUSTOMER GROWTH

- Forecasted New Households
  - Historical Actual Acquisition percentage
  - Actual conversion rate %
  - Actual new commercial as % of new customers
  - Collaboration with COMPASS TAZ

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DESIGN HEATING DEGREE DAYS

LORI BLATTNER
MANAGER, ENERGY EFFICIENCY & REGULATORY PROCESSES

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DESIGN HEATING DEGREE DAYS

- Weather is a Key Residential & Commercial Demand Driver
- Important Goal of the IRP Process is to Ensure Intermountain's Ability to Deliver Natural Gas to Customers Under Extremely Cold (Peak) Temperature Conditions

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HEATING DEGREE DAY (HDD)

- What is a Heating Degree Day?
- Industry-Wide Standard, Measuring How Cold the Weather is Based on the Extent to Which the Daily Mean Temperature Falls Below a Reference Temperature Base (65 Degrees)
- 65 Degrees – Mean Temperature = HDD

Example: High: 54 Degrees
Low: 34 Degrees
Average = 44 Degrees
65 Degrees – 44 Degrees = 21 HDD

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NORMAL HEATING DEGREE DAYS

- Benchmark for the IRP
- Used for Routine Planning and Represent the Typical or "Normal" Weather Expected on a Given Day
- Average Mean Degree Days for a Particular Day
- Intermountain Normal is a 30-Year Rolling Average.
- Normal for the IRP is the 30-Years Ended December 2017.

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DEVELOPMENT OF DESIGN HDD

- Design Degree Days Model the Coldest Temperatures that May Occur on Our System
- Reviewed Idaho's Historical Degree Day Data From the National Oceanic and Atmospheric Administration (NOAA) to Identify the Coldest Years on Record
- October 1984 through September 1985 was the Coldest Heating Season

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep

- This Period Also Included the Coldest Critical Three Month Heating Period (Dec-Feb)
- This Year With Certain Modifications Represents the Basis for the Design Year (DY85)

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DEVELOPMENT OF DESIGN HDD

- The Coldest Actual Month (Dec 1985) Occurred Just Outside the Design Year.
- December 1985 Replaced January of DY85 to Represent the Coldest Month in the Design Base Year

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep

January 1985

December 1985

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DESIGN PEAK DAY

- Engaged Idaho State Climatologist, Dr. Russell Qualls, to Conduct a Peak Day Study
- Dr. Qualls' Work Enabled the Company to Choose a Design Peak Day Temperature Corresponding to a Selected Probability
- 50-Year Peak-Day Event was Selected (79 HDD)

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MODIFICATIONS TO THE PEAK MONTH

DY January

1) 5 coldest consecutive days for the 30 year period selected (From Dec 1990)

3) 5 Day modified period inserted into January in the Design Year, with peak HDD on January 15th for planning purposes

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2) Peak Day 50 Year Probability Event (79 HDD) replaced the coldest day in the 5 coldest days period

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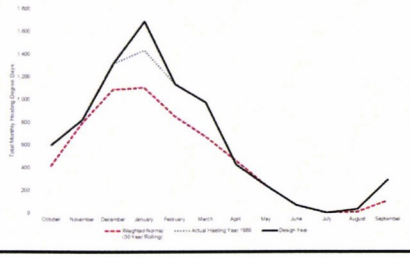
DEGREE DAY GRAPH



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AOI DEGREE DAYS

- Intermountain's service area is climatologically diverse
- Idaho Falls or Sun Valley vs. Boise
- Intermountain has developed unique Degree Days for each AOI
- Methods used to calculate AOI Degree Days mirror the Total Company approach

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DESIGN RESIDENTIAL AND COMMERCIAL USAGE PER CUSTOMER

RUSS NISHIKAWA
MANAGER, ENGINEERING SERVICES

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CUSTOMER USAGE TRENDS

- Nationally, Customers Use Less Natural Gas Now Compared to Decades Ago
- Energy Efficient Building Codes
- More Efficient Furnaces and Water Heaters
- Increased Use of Programmable Thermostats

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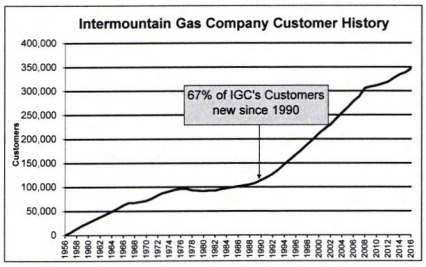
CUSTOMER USAGE TRENDS – IMPACT ON INTERMOUNTAIN'S CUSTOMER BASE

- Conservation Influences Began Impacting Usage in the Early 1990's
- 67% of Intermountain's Customers are New Since 1990



39

USAGE PER CUSTOMER MODELING METHODOLOGY

- Customer Management Module (CMM)
  - Product from DNV GL
  - Now Fully Implemented into IRP Process
  - Part of the Synergi Gas Product Line

40

CMM METHODOLOGY

CMM Uses Historical Billing and Weather Data to Create a Unique Usage Analysis for Each Customer

Area Specific Heating Degree Days are Applied to the Usage Analysis

The Customer Usages are Assigned to the Appropriate Pipeline within Intermountain's Synergi Distribution System Model

41

USAGE PER CUSTOMER BY AOI

- Apply HDD for Each AOI Based on Weather Study
- Allows for a Unique Customer Usage Calculation Based on Geographic Location
  - Canyon County: Identified Customers by Town, Created Single Usage
  - Central Ada & State Street: Grouped AOI's Together as a Similar Customer Base
  - Sun Valley Lateral: Variable Usage by Town
  - Idaho Falls Lateral: Variable Usage by Town

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ADDITIONAL MEETINGS

- **December 4, 2018 – Twin Falls**
  - Core Market Customer Forecasts
  - Industrial Customer Forecasts
  - Non-Traditional Resources
- **June 21, 2019 – Idaho Falls**
  - Weather Analysis Results
  - Usage per Customer Results
  - Energy Efficiency
  - Load Duration Curves
  - Optimization and Enhancements

43

FEEDBACK SUBMISSIONS

Comment Card

- Comment Cards
- 2019IRP.Comments@intgas.com
- Please provide comments and feedback within 10 days

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NWGA
NORTHWEST GAS ASSOCIATION

1914 Willamette Falls Dr., #255
West Linn, OR 97068
(503) 344-6637
www.nwga.org

NWGA Members:

- Avista Utilities
- Cascade Natural Gas Corp.
- FortisBC Energy
- Intermountain Gas Co.
- NW Natural
- Puget Sound Energy
- Enbridge BC Pipeline
- TransCanada GTN System
- Williams NW Pipeline

1

What is "The Outlook"?

- Unique look at regional gas dynamics

Topics for today:

- Supply (abundant)
- Prices (low)
- Demand Growth (modest)
  - Scenarios
- Capacity (sufficient…for now)

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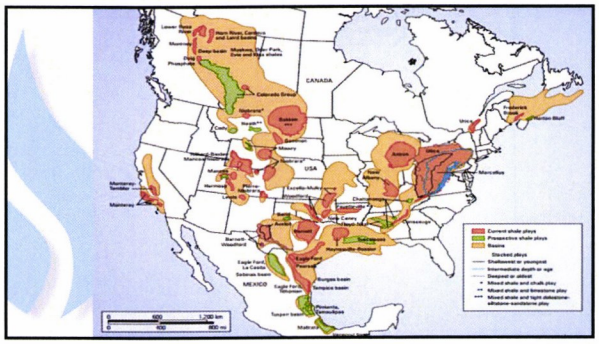
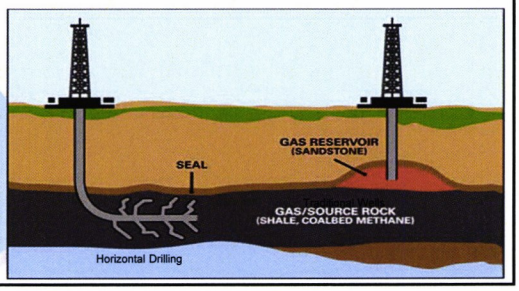
2



3

"Unconventional" vs Conventional



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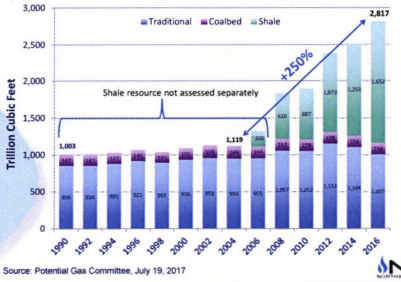
5

Total Available U.S. Resource



Source: Potential Gas Committee, July 19, 2017

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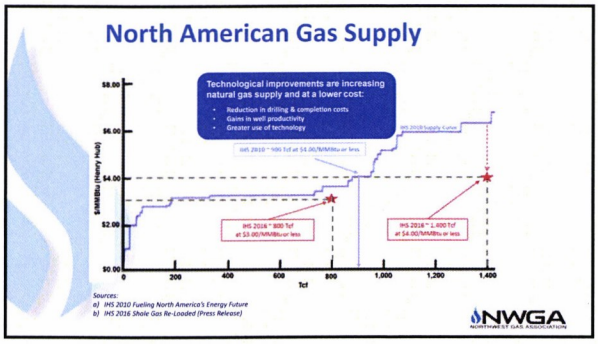
6


North American Gas Supply
Technological improvements are increasing natural gas supply and at a lower cost:
Reduction in drilling & completion costs
Gains in well productivity
Greater use of technology
IHS 2010 ~ 900 Tcf at $4.00/MMBtu or less
IHS 2010 Supply Curve
IHS 2016 ~ 800 Tcf at $3.00/MMBtu or less
IHS 2016 ~ 1,400 Tcf at $4.00/MMBtu or less
$/MMBtu (Henry Hub)
Tcf
Sources:
a) IHS 2010 Fueling North America's Energy Future
b) IHS 2016 Shale Gas Re-Loaded (Press Release)
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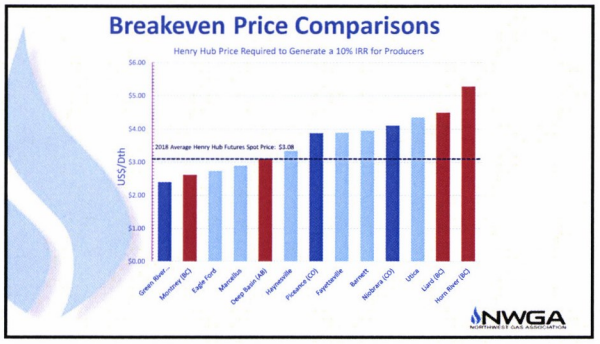
Breakeven Price Comparisons
Henry Hub Price Required to Generate a 10% IRR for Producers
2018 Average Henry Hub Futures Spot Price: $3.08
US$/Dth
Green River
Montney (BC)
Eagle Ford
Marcellus
Deep Basin (AB)
Haynesville
Piceance (CO)
Fayetteville
Barnett
Niobrara (CO)
Utica
Liard (BC)
Horn River (BC)
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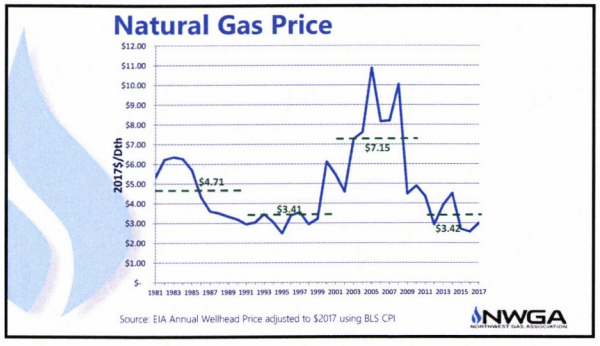
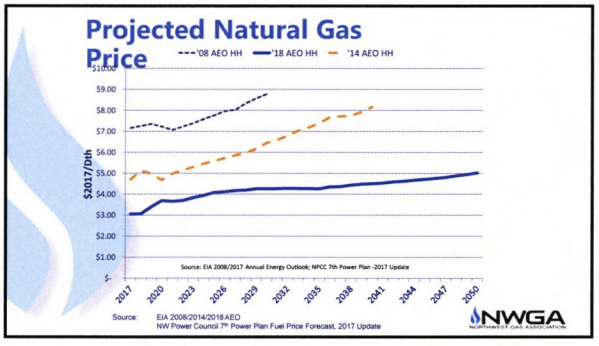

Natural Gas Price
2017$/Dth
$4.71
$3.41
$7.15
$3.42
Source: EIA Annual Wellhead Price adjusted to $2017 using BLS CPI
NWGA

9


Projected Natural Gas Price
'08 AEO HH
'18 AEO HH
'14 AEO HH
$2017/Dth
Source: EIA 2008/2017 Annual Energy Outlook; NPCC 7th Power Plan -2017 Update
Source: EIA 2008/2014/2018 AEO
NW Power Council 7th Power Plan Fuel Price Forecast, 2017 Update
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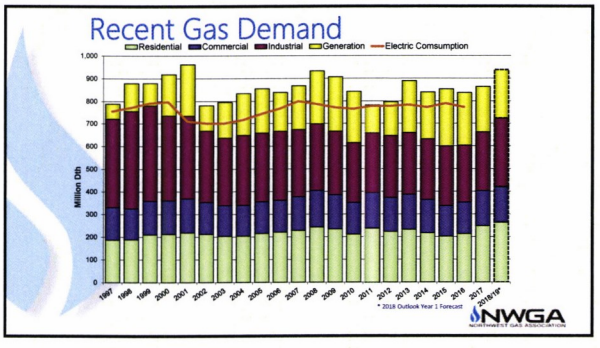
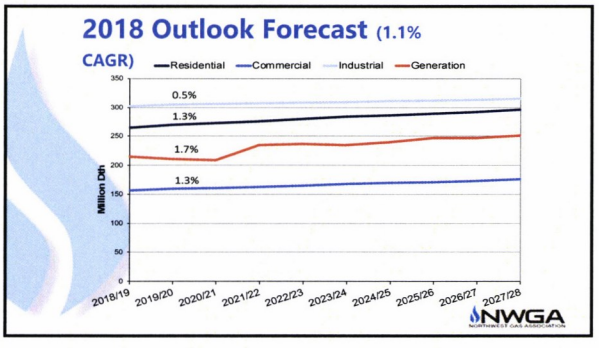
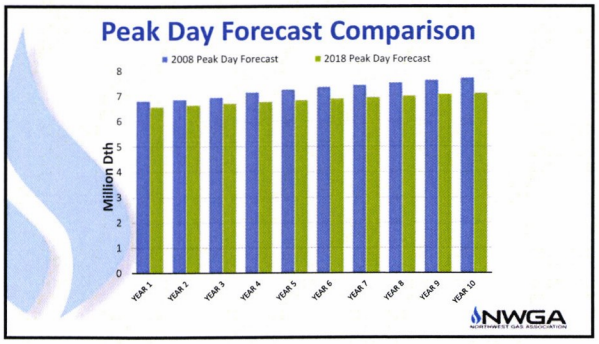

Recent Gas Demand
Residential
Commercial
Industrial
Generation
Electric Comsumption
Million Dth
* 2018 Outlook Year 1 Forecast
NWGA

11


2018 Outlook Forecast (1.1% CAGR)
Residential
Commercial
Industrial
Generation
0.5%
1.3%
1.7%
1.3%
Million Dth
NWGA

12


Peak Day Forecast Comparison
2008 Peak Day Forecast
2018 Peak Day Forecast
Million Dth
0
1
2
3
4
5
6
7
8
YEAR 1
YEAR 2
YEAR 3
YEAR 4
YEAR 5
YEAR 6
YEAR 7
YEAR 8
YEAR 9
YEAR 10
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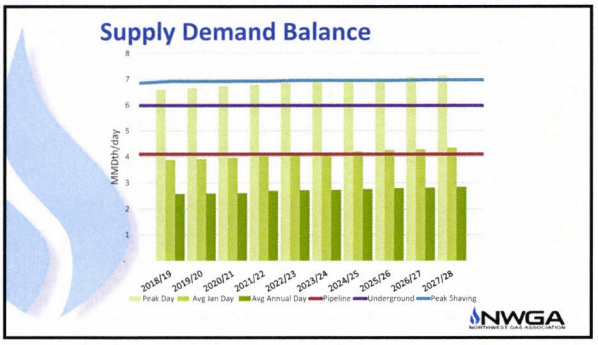
Supply Demand Balance
MMDth/day
0
1
2
3
4
5
6
7
8
2018/19
2019/20
2020/21
2021/22
2022/23
2023/24
2024/25
2025/26
2026/27
2027/28
Peak Day
Avg Jan Day
Avg Annual Day
Pipeline
Underground
Peak Shaving
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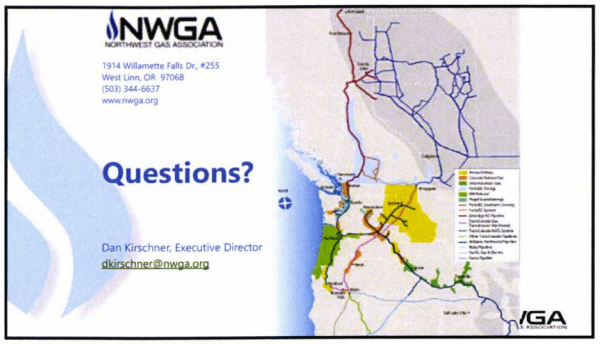

NWGA
NORTHWEST GAS ASSOCIATION
1914 Willamette Falls Dr., #255
West Linn, OR 97068
(503) 344-6637
www.nwga.org
Questions?
Dan Kirschner, Executive Director
dkirschner@nwga.org

15

INTERMOUNTAIN®
GAS COMPANY
A Subsidiary of MDU Resources Group, Inc.

INTEGRATED RESOURCE PLAN: CUSTOMER FORECASTS & NON-TRADITIONAL RESOURCES

DECEMBER 4, 2018 INTERMOUNTAIN GAS RESOURCE ADVISORY COMMITTEE (IGRAC)

1

WELCOME

- Guest Safety & Comfort
- Introductions

2

IRP TEAM

- Mike McGrath – *Director, Regulatory Affairs*
- Eric Wood – *Supervisor, Gas Supply*
- Russ Nishikawa – *Manager, Engineering Services*
- Lori Blattner – *Manager, Energy Efficiency and Regulatory Processes*
- Dave Swenson – *Manager, Industrial Services*
- Cheryl Imlach – *Manager, Energy Utilization*
- Raycee White – *Regulatory Analyst*

3

AGENDA

- **Welcome, Guest Safety & Introductions** – *Russ Nishikawa*
- **IRP Purpose** – *Russ Nishikawa*
- **Core Market Customer Forecasts** - *Cheryl Imlach*
- **Industrial Customer Forecasts** - *Dave Swenson*
- **Non-Traditional Resources** - *Russ Nishikawa*
- **Questions/Discussion**
- **Lunch Presentation** - *John Church*

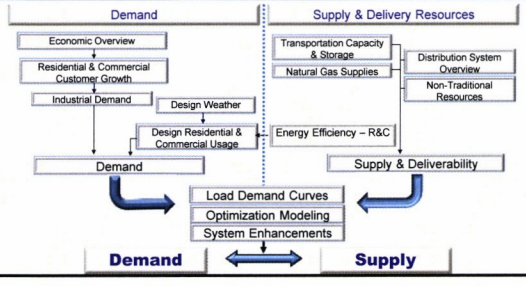
4

INTERMOUNTAIN GAS COMPANY

- **Components of the Integrated Resource Plan (IRP) Process**

5

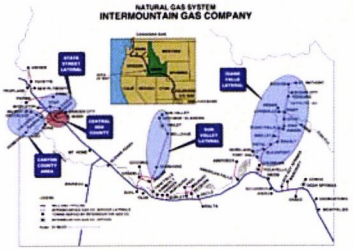
THE IRP PROCESS



6

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



7

BENEFITS OF AN IRP

- Blueprint to meet the Company's firm customer demands over a five-year forecast period based on various assumptions
- Provides frequent updates to the projected growth on the Company's system
- Considers all available resources to meet the needs of the Company's customers on a consistent and comparable basis
- Helps to ensure Intermountain Gas Company will continue to provide reliable energy service while minimizing costs

8

CORE MARKET FORECAST

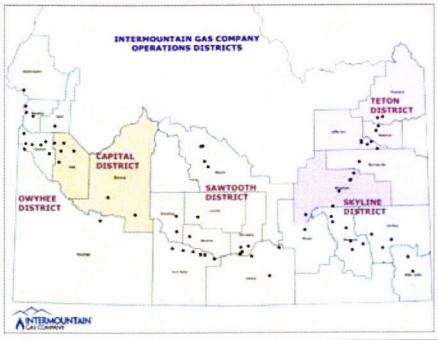
CHERYL IMLACH
MANAGER, ENERGY UTILIZATION

9

FORECASTING COMPONENTS

- Economic Forecast – State of Idaho
  - Household Growth Rate by County – Base, High & Low Scenario
- Market Penetration Rate by Region
- 'Boots-on-the-Ground" Observations/Feedback

10



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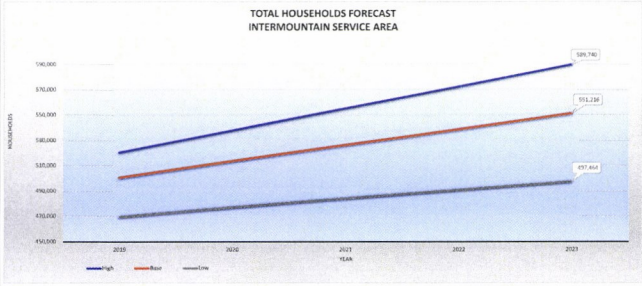
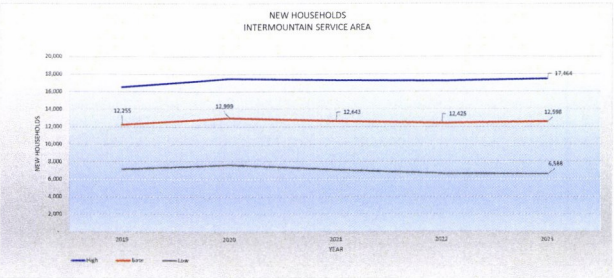
ANNUAL TOTAL HOUSEHOLDS FORECAST



12

ADDITIONAL HOUSEHOLDS



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MARKET GROWTH VARIABLES

Penetration Rate of New Construction Market

- Household Growth → New Homes → New Gas Customers

Existing Residential Conversion

- Computed as a Function of New Residential Customers

Small Commercial Customers

- Computed as a Function of New Residential Customers

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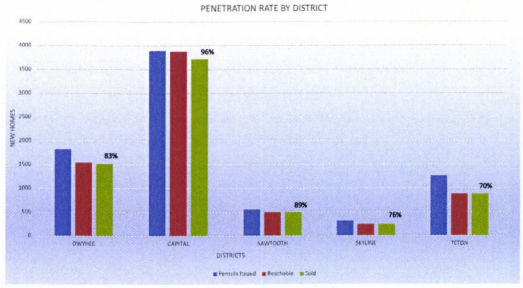
PENTRATION RATE OF NEW CONSTRUCTION



15

EXISTING RESIDENTIAL CONVERSIONS

Conversion Rate

Region	3 year	10 year	15 year
West	7.25%	9.79%	7.80%
Central	19.77%	23.88%	20.66%
East	18.88%	22.21%	18.30%
Company	10.58%	14.11%	11.47%

$$= \frac{\text{Total annual conversion customers}}{\text{Total annual residential sales}}$$

SMALL COMMERCIAL ACQUISITION RATE

$$\frac{\text{Total annual new commercial customers}}{\text{Total annual residential sales}} =$$

Commercial Rate

Region	3 year	10 year	15 year
West	4.80%	6.48%	6.69%
Central	8.96%	11.58%	10.08%
East	8.12%	11.44%	11.02%
Company	5.83%	8.15%	8.00%

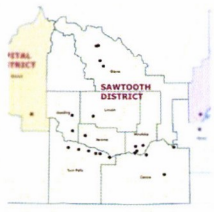
16

Sample Calculation

Sawtooth District

County	Total Households 2018	Total Households 2019	2019 Growth
Blaine	9,598	9,790	192
Cassia	8,218	8,324	106
Gooding	5,430	5,480	50
Jerome	7,935	8,090	155
Lincoln	1,867	1,913	46
Minidoka	7,661	7,740	79
Twin Falls	32,584	33,433	849
	73,293	74,770	1,477

Penetration	89.00%	1,315
Conversion	19.77%	260
Commercial	8.12%	107
Forecast		1,681



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BASE CASE- GROWTH FORECAST

ANNUAL RESIDENTIAL GROWTH - by District

	Y2019	Y2020	Y2021	Y2022	Y2023
Owyhee	2,894	3,132	3,134	3,180	3,300
Capital	5,326	5,595	5,380	5,212	5,194
Sawtooth	1,574	1,613	1,514	1,433	1,419
Skyline	721	763	717	682	695
Teton	1,295	1,406	1,401	1,408	1,453
RS Total	11,810	12,508	12,146	11,914	12,061

ANNUAL COMMERCIAL GROWTH - by District

	Y2019	Y2020	Y2021	Y2022	Y2023
Owyhee	130	140	140	142	148
Capital	238	250	241	233	232
Sawtooth	107	109	103	97	96
Skyline	35	37	35	33	34
Teton	64	69	69	69	71
GS Total	573	606	588	575	582

TOTAL GROWTH FORECAST - by District

	Y2019	Y2020	Y2021	Y2022	Y2023
Owyhee	3,023	3,272	3,275	3,322	3,448
Capital	5,564	5,845	5,620	5,445	5,427
Sawtooth	1,681	1,722	1,616	1,530	1,515
Skyline	756	801	753	716	729
Teton	1,358	1,474	1,469	1,477	1,524
Total	12,384	13,115	12,733	12,490	12,642

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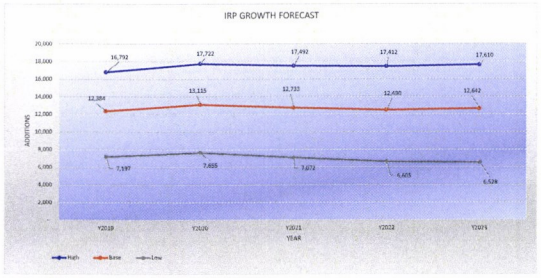
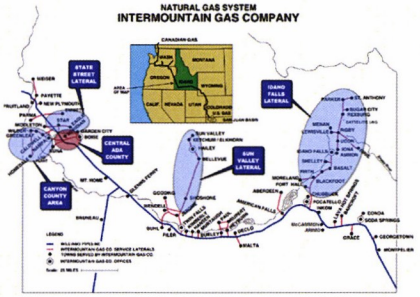
2019 IRP GROWTH FORECAST



19

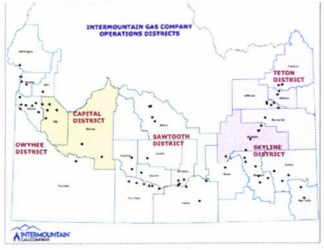
AREAS OF INTEREST (AOI)



20

FORECASTING GROWTH- AREAS OF INTEREST (AOI)

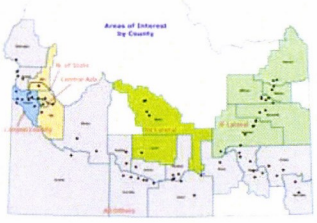
County Growth by District



21

FORECASTING GROWTH- AREAS OF INTEREST (AOI)

County Growth by Area of Interest (AOI)



22

Reallocation of County Growth

District → AOI

Sawtooth District

County	Total Households 2018	Total Households 2019	2019 Growth
Blaine	9,598	9,790	192
Cassia	8,218	8,324	106
Gooding	5,430	5,480	50
Jerome	7,935	8,090	155
Lincoln	1,867	1,913	46
Minidoka	7,661	7,740	79
Twin Falls	32,584	33,433	849
	73,293	74,770	1,477
Penetration		89.00%	1,315
Conversion		19.77%	260
Commerical		8.12%	107
Forecast			1,681

SUN VALLEY LATERAL

County	Households 2018	Household 2019	2019 Growth
Blaine	9,598	9,790	192
Lincoln	1,867	1,913	46
	13,483	13,722	238
Penetration		89.00%	212
Conversion		19.77%	42
Commerical		8.12%	17
			271

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GROWTH FORECAST BY DISTRICT AND AOI

TOTAL GROWTH FORECAST - by District

	Y2019	Y2020	Y2021	Y2022	Y2023
Owyhee	3,023	3,272	3,275	3,322	3,448
Capital	5,564	5,845	5,620	5,445	5,427
Sawtooth	1,681	1,722	1,616	1,530	1,515
Skyline	756	801	753	716	729
Teton	1,358	1,474	1,469	1,477	1,524
Total	12,384	13,115	12,733	12,490	12,642

TOTAL GROWTH FORECAST - by AOI

	Y2019	Y2020	Y2021	Y2022	Y2023
Canyon Cnty	1,746	2,972	2,994	3,051	3,172
Sun Valley	271	286	280	277	280
IF Lateral	1,526	1,655	1,640	1,641	1,694
N of State St	2,434	2,541	2,652	2,768	2,890
Central Ada Mi	1,702	1,757	1,813	1,871	1,931
All Other	3,706	3,904	3,355	2,882	2,676
Total	12,384	13,115	12,733	12,490	12,642

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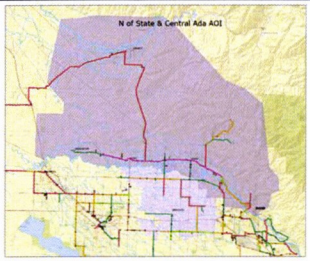
N. OF STATE & CENTRAL ADA
AREAS OF INTEREST

COMPASS
COMMUNITY PLANNING ASSOCIATION of Southwest Idaho

- GIS Shape File of AOI's
- Traffic Analysis Zones (TAZ)
- TAZ Growth Factor per AOI
- Current IGC Customer Count per AOI
- Apply Annual TAZ Growth to IGC Customer Count



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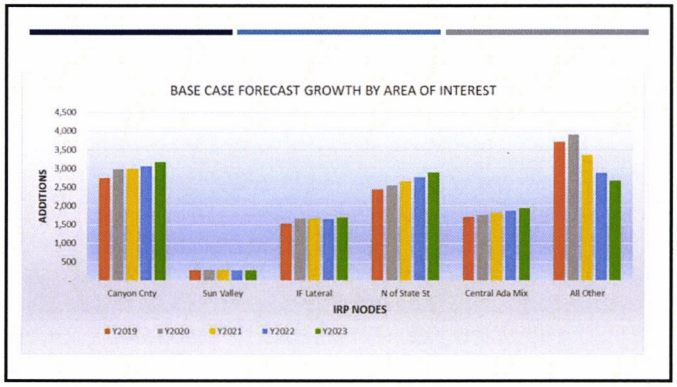

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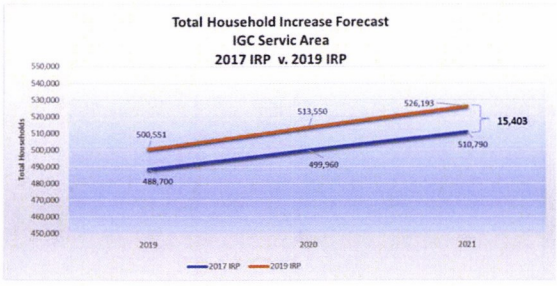

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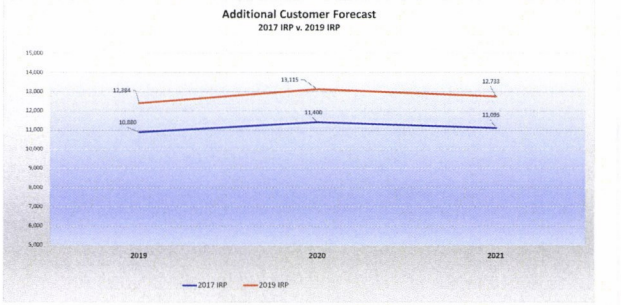

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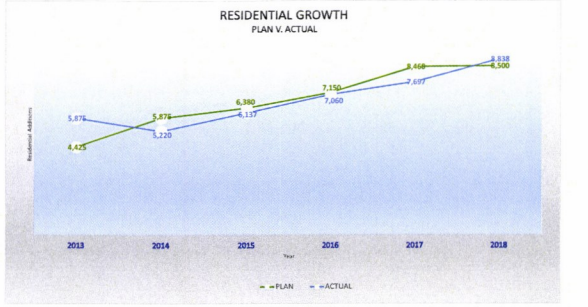

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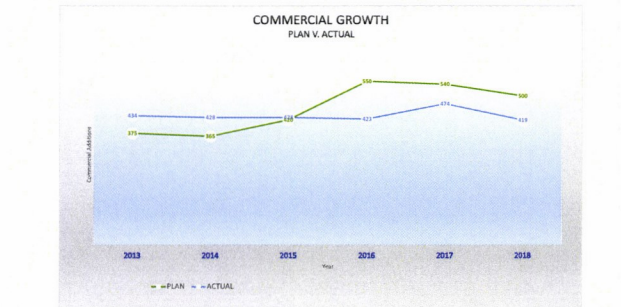

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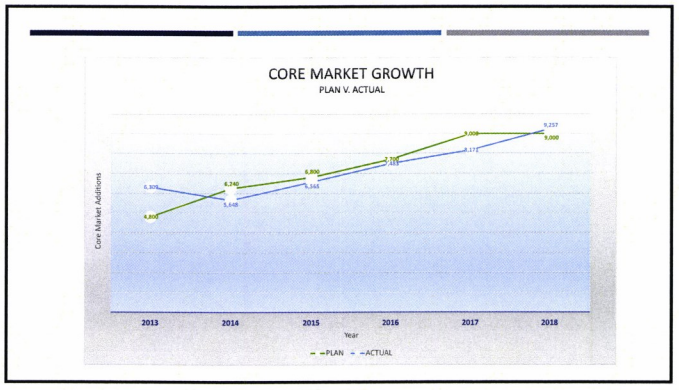


31

QUESTIONS?

32

2018 IRP
LARGE VOLUME CUSTOMER FORECAST

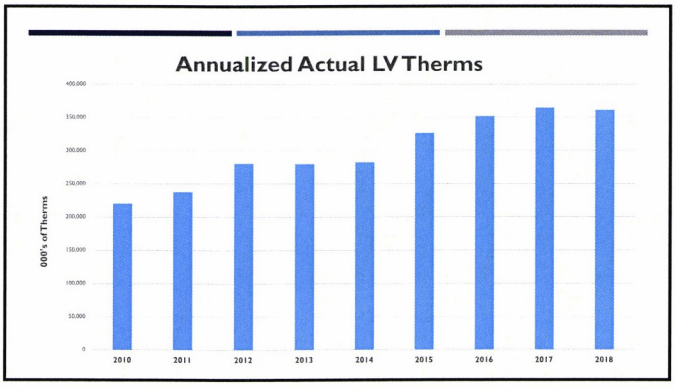
DAVID SWENSON
MANAGER, INDUSTRIAL SERVICES

33

WHAT IS A LARGE VOLUME CUSTOMER?

- 125 largest customers; approximately 55% of 2017 sales
- Minimum 200,000 therms per contract year requirement
- Mix of "Industrial" and "Commercial" type
- Must elect from 3 tariffs; LV-1 Sales or T-3 or T-4 Transportation
- Minimum one year contract; the contract sets the term and Maximum Daily Firm Quantity (MDFQ) for firm peak day use
- Contracts are site specific; can combine on contiguous property

34



35

CLASSIFICATION OF 125 LV CUSTOMERS

By Rate Class:	#	%	Therms
❖LV-1 Sales –	21	17%	2%
❖T-3 Interruptible Transport –	7	6%	30%
❖T-4 Firm Transport –	97	78%	60%
❖Total –	125	100%	100%

36

SEGMENTATION OF 125 LV CUSTOMERS

By Market "Segment"	#	%	Therms
Potato Processors –	17	14%	35%
Other Food Processors –	16	13%	18%
Meat & Dairy –	18	14%	13%
Ag & Feed –	5	4%	1%
Chemical/Fertilizer –	3	2%	11%
Manufacturing –	24	19%	6%
Institutional –	33	25%	7%
Other –	11	9%	9%
Total –	125	100%	100%

37

LOCATION OF 125 LV CUSTOMERS

By AOI:	#	%	Therms
IFL –	22	18%	23%
SVL –	4	3%	1%
Central Ada –	3	2%	1%
State Street –	3	2%	1%
Canyon County –	22	18%	10%
All Other –	71	57%	64%
Total –	125	100%	100%

38

OVERVIEW OF FORECAST TECHNIQUE

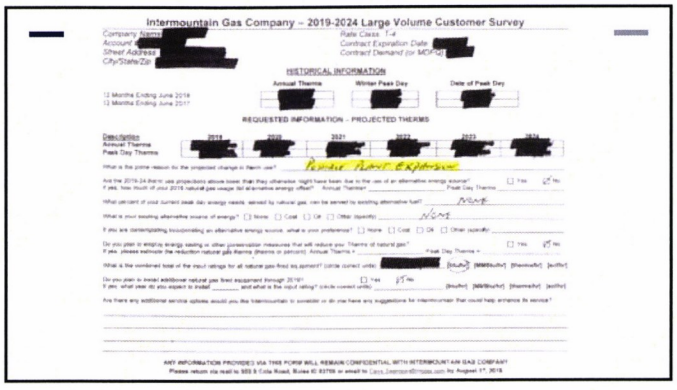
- Don't use statistics/regression techniques
- Use an "adjusted" historical usage approach
- Most not as weather sensitive as the Core
- Small population (not as many customers)
- Not as homogenous as Core (size, weather sensitivity)
- Forecast both therms use and CD (MDFQ/MDQ)

39

SURVEY SAYS

- Sent out 121 surveys in June/July 2018
- Provided last two year's of actual usage and Peak Day use and date
- Also requested other information from plant contacts or other external information
  - Growth plans, conservation, energy efficiency, other data relating to changes in usage, comments/suggestions
- 51 were returned

40



Intermountain Gas Company – 2019-2024 Large Volume Customer Survey

Company Name: [redacted]
Account #: [redacted]
Street Address: [redacted]
City/State/Zip: [redacted]

Rate Class: T-4
Contract Expiration Date: [redacted]
Contract Demand (or MDFQ): [redacted]

HISTORICAL INFORMATION

	Annual Therms	Winter Peak Day	Date of Peak Day
12 Months Ending June 2018	[redacted]	[redacted]	[redacted]
12 Months Ending June 2017			

REQUESTED INFORMATION - PROJECTED THERMS

Description	2019	2020	2021	2022	2023	2024
Annual Therms	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Peak Day Therms	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

What is the prime reason for the projected change in therm use? Reduce Natural Gas Usage

Are the 2018-24 therm use projections above lower than they otherwise might have been due to the use of an alternative energy source? ☐ Yes ☑ No
If yes, how much of your 2018 natural gas usage did alternative energy offset? Annual Therms: _____ Peak Day Therms: _____

What percent of your current peak day energy needs, served by natural gas, can be served by existing alternative fuel? NONE

What is your existing alternative source of energy? ☐ None ☐ Coal ☐ Oil ☐ Other (specify): _____

If you are contemplating transitioning an alternative energy source, what is your preference? ☐ None ☐ Coal ☐ Oil ☐ Other (specify): _____

Do you plan on employ energy saving or other conservation measures that will reduce your Therms of natural gas? ☐ Yes ☑ No
If yes, please estimate the reduction natural gas therms (therms or percent): Annual Therms = _____ Peak Day Therms = _____

What is the combined total of the input ratings for all natural gas-fired kiln burners? (circle correct units) [redacted] (btu/hr) (MMBtu/hr) (therms/hr) (ton/hr)

Do you plan to install additional natural gas fired equipment through 2019? ☐ Yes ☑ No
If yes, what year do you expect to install _____ and what is the input rating? (circle correct units) _____ (btu/hr) (MMBtu/hr) (therms/hr) (ton/hr)

Are there any additional service options would you like Intermountain to consider or do you have any suggestions for Intermountain that could help enhance its service?

ANY INFORMATION PROVIDED VIA THIS FORM WILL REMAIN CONFIDENTIAL WITH INTERMOUNTAIN GAS COMPANY
Please return via mail to 555 S Cole Road, Boise ID 83709 or email to [redacted] by August 17, 2018.

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OVERVIEW OF FORECAST TECHNIQUE

- Adjusted historical data with survey information and other data (e.g. EDOs) to develop three forecasts
- Assumed growth by specific customers *except for*
- Adjusted weather sensitive customer group by ±10% for High Growth and Low Growth scenarios

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ADJUSTMENTS TO HISTORICAL – 3 SCENARIOS

- Used recent trends to validate results
- Base Case, High Growth, Low Growth

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SENDOUT STATISTICS

2018 SENDOUT VS PLAN

Core		Industrial		Total Sendout	
Month to Date Plan	2,538,096	Month to Date Plan	2,155,667	Month to Date Plan	4,693,763
Month to Date Actual	3,109,307	Month to Date Actual	2,315,246	Month to Date Actual	5,424,553
MTD Over(Under) Plan	571,211	MTD Over(Under) Plan	159,582	MTD Over(Under) Plan	730,794
MTD Over(Under) Plan %	22.51%	MTD Over(Under) Plan %	7.40%	MTD Over(Under) Plan %	15.57%
Quarter to Date Plan	4,338,709	Quarter to Date Plan	5,287,107	Quarter to Date Plan	9,625,816
Quarter to Date Actual	5,473,205	Quarter to Date Actual	5,676,225	Quarter to Date Actual	11,149,430
QTD Over(Under) Plan	1,134,496	QTD Over(Under) Plan	389,118	QTD Over(Under) Plan	1,523,614
QTD Over(Under) Plan %	26.15%	QTD Over(Under) Plan %	7.36%	QTD Over(Under) Plan %	15.83%
Year to Date Plan	26,648,959	Year to Date Plan	29,980,357	Year to Date Plan	56,629,316
Year to Date Actual	28,286,703	Year to Date Actual	29,981,478	Year to Date Actual	58,268,181
YTD Over(Under) Plan	1,637,744	YTD Over(Under) Plan	1,121	YTD Over(Under) Plan	1,638,865
YTD Over(Under) Plan %	6.15%	YTD Over(Under) Plan %	0.00%	YTD Over(Under) Plan %	2.89%

44

BASE CASE SCENARIO ASSUMPTIONS

- Starts with Base Case Forecast
- Natural gas prices competitive with other energy sources
- Includes 5 new customers
- Mix of segments, mostly T-4, assumed most in Magic Valley and western Idaho

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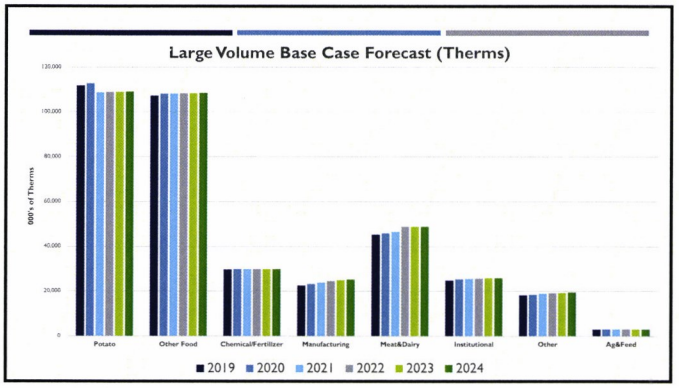

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HIGH GROWTH SCENARIO ASSUMPTIONS

- Starts with Base Case Forecast
- Natural gas prices remain comparatively low
- Assumes 9 new customers totaling 6.5 million therms by 2024
- Additions mostly in T-4; Meat & Dairy and Other Food Processing; all growth in All Other
- Annualized growth rate of 1.8%

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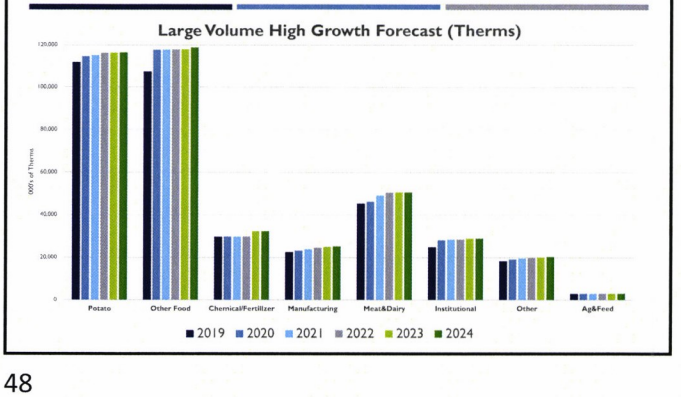

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LOW GROWTH SCENARIO ASSUMPTIONS

- Starts with Base Case Forecast
- Assume gas prices become less competitive
- Economy slows
- Removed any customer having difficulty staying above the 200,000 therm annual minimum
- Two new LV-1 customers
- Annualized growth rate of -1.3%

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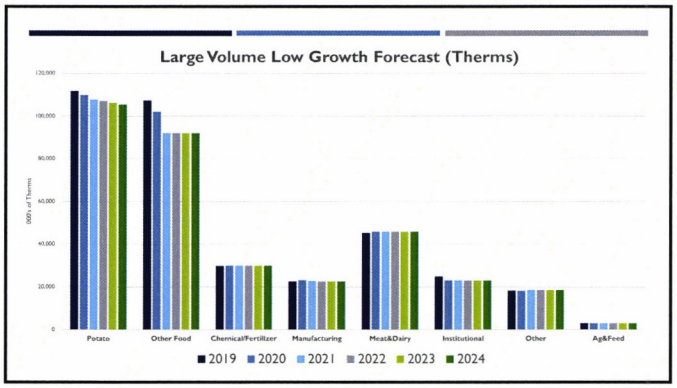

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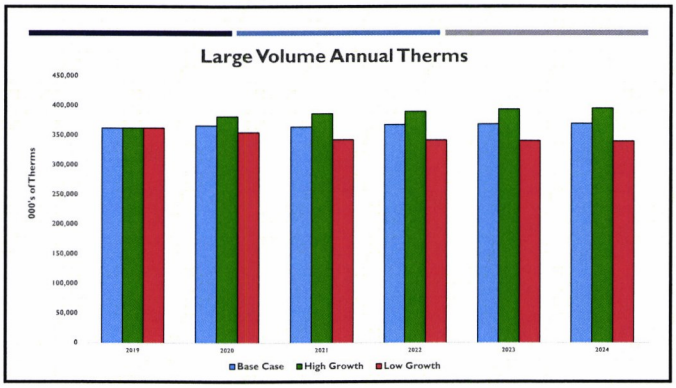

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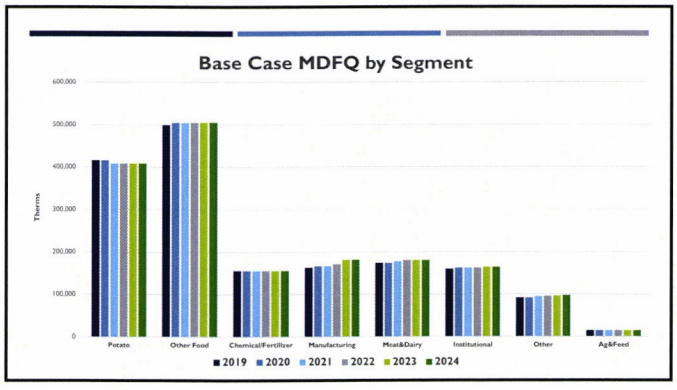
OPTIMIZATION MODELING - MDFQ VS THERM FORECAST

- Use MDFQ not therm forecast in optimization model
- Must provide MDFQ 365 day/year
- Only firm customers in design peak; no interruptible
- Follows adjustments from therm changes
- Includes new customer additions in High Growth Case
- Total LV Base Case compound growth rate of 0.4%

52



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QUESTIONS?

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NON-TRADITIONAL RESOURCE PLANNING

RUSS NISHIKAWA
MANAGER, ENGINEERING SERVICES

55

NON-TRADITIONAL SUPPLY RESOURCES

Potential to provide additional resources to meet "peak day" design loads by decreasing demand through alternative fuels or supplementing resources

56

NON-TRADITIONAL SUPPLY RESOURCES

Researched six non-traditional supply resources

1. Fuel Oil/Diesel
2. Coal
3. Wood Chips
4. Propane
5. Satellite/Portable LNG Equipment
6. Biomethane Production

57

NON-TRADITIONAL SUPPLY RESOURCE #1

Fuel Oil/Diesel

- Industrial application
- Decreases LV load ~ 15k – 20k th/day per customer
- Three to five days of onsite storage
- Facilities equipment cost is ~ $200,000 - $500,000 plus O&M

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NON-TRADITIONAL SUPPLY RESOURCE #2

Coal

- Industrial application
- Currently three firm LV customers with coal burning ability
- Could decrease LV load ~50,000 – 150,000 th/day
- 20 - 28 million Btu per ton
- Requires special permitting and additional equipment

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NON-TRADITIONAL SUPPLY RESOURCE #3

Wood Chips

- Industrial application
- One LV customer on IFL
- Decreases LV load ~ 6,000 – 8,000 th/day
- Typically stores a 2 month supply
- ~ 9 million Btu per ton (22 lbs/th)
- Wood supply and additional equipment required

60

NON-TRADITIONAL SUPPLY RESOURCE #4

Propane

- Industrial application
- One gallon is ~ 92,000 Btu's
- Currently no existing customers
- Typically seven peak days of onsite storage

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NON-TRADITIONAL SUPPLY RESOURCE #5

Satellite LNG

- Industrial or distribution system application
- 150 - 650 psig delivery pressure
- Typical facility can send out 50k-90k th/day
- Equipment cost $2 - 5 million plus LNG
- Cost to lease is $250k - $350k per month

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NON-TRADITIONAL SUPPLY RESOURCE #6

Biomethane Production (RNG)

- Renewable fuel sourced from biomass material
- Growing industry with potential in southern Idaho due to quantity of dairies and farm byproduct
- Potential supply of ~10,000 to 50,000 th/day biogas injection per site
- IGC currently has one RNG project approved

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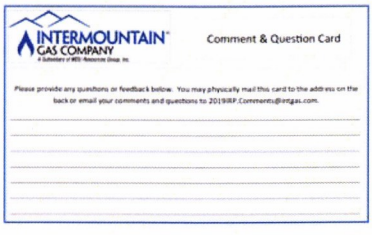
QUESTIONS?

64

FEEDBACK SUBMISSIONS


INTERMOUNTAIN GAS COMPANY

Comment & Question Card

Please provide any questions or feedback below. You may physically mail this card to the address on the back or email your comments and questions to 2019IRP.Comments@intgas.com.

- Comment Cards
- 2019IRP.Comments@intgas.com
- Please provide comments and feedback within 10 days

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ADDITIONAL MEETING

- **June 21, 2019 – Idaho Falls**
  - Weather Analysis Results
  - Usage per Customer Results
  - Energy Efficiency
  - Load Duration Curves
  - Optimization and Enhancements

66

Economic Forecast

John Church
Idaho Economics
December 2018

1

Idaho Economics Summer 2018 Economic Forecast

for the State of Idaho and the Counties in Idaho

Provides county by county projections for wages, employment, population, and households

Uses national as a driver for those sectors of the Idaho economy with significant national economic exposure. But, the forecast is also interactive with the local serving sectors of the Idaho economy.

Future populations are predicted using a cohort component population forecasting model which predicts annual births, deaths, as well as population in/out migration.

2

Idaho Economics 2018 Economic Forecast

for the State of Idaho and the Counties in Idaho

Future household growth, which is the key driver for future residential customer growth is modeled as a function of population (less those individuals in group quarters), and general economic conditions in the state.

In summary, good or improving economic conditions will speed up the rate of household growth, however worsening or declining economic conditions will slow the rate of household formation and, in turn, slow the rate of household growth.

3

Economic Growth Scenarios

The Base Case Economic Forecast assumes a normal amount of economic fluctuation and normal business cycles it is the "best estimate" of future economic activity in the State and it's forty four counties.

The High Growth Scenario assumes a more rapidly growing economy -- similar to the growth that Idaho experienced in the 1990s.

4

Economic Growth Scenarios

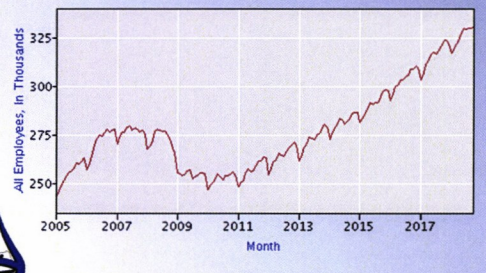
The Low Growth Scenario assumes a period of slower economic growth for the State of Idaho.

By definition, slower economic growth produces fewer employment opportunities in the future. In turn, this scenario of slow economic performance affects the rate of population growth by decreasing the rate of population in-migration (or, at times, causing a population out-migration) to Idaho, and thereby slowing the rate of future household growth.

5

Where Are We Now?

Boise MSA Non-Ag Employment
January 2005 – October 2018



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Where Are We Now?

Idaho Manufacturing Employment
January 2005 – October 2018

7

The Economic Forecast

In the 2018 - 2040 Forecast Period Idaho's Economy will experience:

An annual average Nonagricultural employment growth of 1.7% per year, adding nearly 400,500 jobs to the State's payrolls.

Population growth averaging 1.6% per year over the 2015 - 2040 forecast period with, by the year 2040, the State's population nearing 2,559,000 -- a gain of close to 988,600 from the 2010 Census.

Plus, the addition of nearly 446,000 new households in Idaho over the 2015 to 2040 period -- an annual average increase of 1.9% per year over twenty five years.

8

The Economic Forecast

Nonagricultural employment in Idaho is expected to increase by nearly 336,200 in the 2015 to 2040 period. But some industries will fare better than others:

Agriculture is projected to experience a loss of nearly 12,000 jobs statewide by the year 2040.

The Mining industry is expected to gain a modest 800 additional jobs statewide by the year 2040.

Construction, Mining, and Natural Resources posts annual average employment gains of 2.4% per year, posting a gain of nearly 34,800 in the State by the year 2040.

9

The Economic Forecast

Manufacturing employment in Idaho is predicted to increase at an annual average rate of 0.3%per year over the 2015 - 2040 period for an absolute gain of nearly 5,600 jobs from the 2015 employment levels.

The Transportation, Wholesale and Retail Trade, and the Utilities industries are expected to post annual average employment gains of 0.8% per year over the 2015 to 2040 period producing an absolute gain of close to 30,100 new jobs in the State.

Employment in the Finance, Insurance, and Real Estate Industries is expected to increase by 6,100 over the 2015 - 2040 period -- an annual average increase of 0.6% per year.

10

The Economic Forecast

The Service Industries in Idaho are expected to be the fastest growing in terms of employment growth over the 2015 to 2040 period –

Employment in the Professional and Business Services category is forecasted to increase by 76,200 over the 2015 - 2040 period -- an annual average increase of 2.7% per year.

Education and Health Services employment in the State is forecasted to increase by 79,600 over the 2015 - 2040 period -- an annual average increase of 2.4% per year.

11

The Economic Forecast

Idaho employment in the Leisure and Hospitality Industries is forecasted to increase by nearly 30,300 over the 2015 - 2040 period -- an annual average increase of 1.5% per year. Lastly, employment in the category of Other Services is projected to increase by 1,500 over the 2015 - 2040 period -- an annual average increase of 0.6% per year.

In total, Idaho Service Industry Employment is projected to increase by 189,300 over the 2015 to 2040 period – 56.0% of the overall increase in Non-Ag employment in the State over the forecast period.

Government employment is predicted to increase at an annual average rate of 1.5% per year over the 2015 - 2040 period with a net gain of nearly 54,300 jobs statewide.

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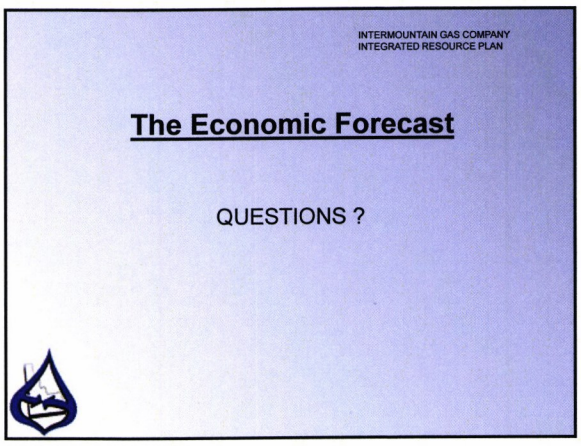

INTERMOUNTAIN GAS COMPANY
INTEGRATED RESOURCE PLAN
The Economic Forecast
QUESTIONS ?

13

INTERMOUNTAIN® GAS COMPANY

A Subsidiary of MDU Resources Group, Inc.

INTEGRATED RESOURCE PLAN: ENERGY EFFICIENCY, LOAD DEMAND CURVES, RESOURCE OPTIMIZATION & SYSTEM ENHANCEMENTS

JULY 17, 2019 INTERMOUNTAIN GAS RESOURCE ADVISORY COMMITTEE (IGRAC)

1

WELCOME

- Guest Safety & Comfort
- Introductions

2

IRP TEAM

- Lori Blattner – *Director, Regulatory Affairs*
- Eric Wood – *Supervisor, Gas Supply*
- Russ Nishikawa, P.E. – *Manager, Engineering Services*
- Kathy Wold – *Manager, Energy Efficiency*
- Cheryl Imlach – *Manager, Energy Services*
- Dave Swenson – *Manager, Industrial Services*
- Raycee White – *Regulatory Analyst*

3

COMMITTEE MEMBERS

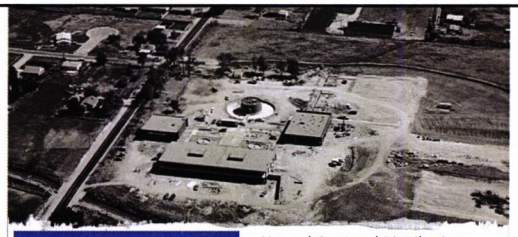
- John Chatburn – *Idaho Office of Energy Resources*
- Dave Allred – *Northwest Pipeline-Williams*
- Randy Thomas – *Amy's Kitchen*
- Kit Kamo – *Snake River Economic Development Alliance*
- Tina Wilson – *Western Alliance For Economic Development*
- Connie Stopher – *Southern Idaho Economic Development Organization (SEIDO)*
- Beth Ineck – *Nampa Economic Development*
- Matt Hunter – *Pocatello/Chubbuck Chamber of Commerce*
- Scott Reese – *Bingham County Economic Development*
- Teresa White – *REDI of Eastern Idaho*
- Steve Fultz – *Caldwell Economic Development*
- Idaho Public Utilities Commission Staff

4

AGENDA

- **Welcome, Guest Safety & Introductions** – *Lori Blattner*
- **IRP Purpose** – *Lori Blattner*
- **Energy Efficiency Results** – *Kathy Wold*
- **Load Demand Curves** – *Eric Wood*
- **Lunch Presentation** – *Boris Prokop*
- **Distribution System Enhancements** – *Russ Nishikawa*
- **Supply Equals Demand** – *Eric Wood*

5



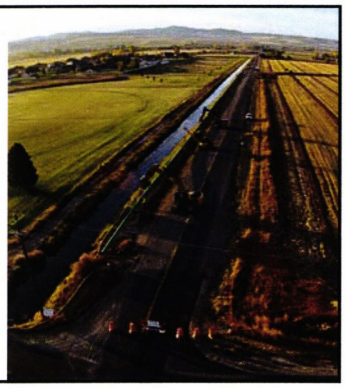
Intermountain Gas Company

- Natural Gas Local Distribution Company
- Founded in 1950
- Served its first customer in 1956
- Subsidiary of MDU Resources Group

6

Intermountain Gas Company

- 74 Communities Served
- Over 365,000 Customers
- Over 720 million therms delivered in 2018



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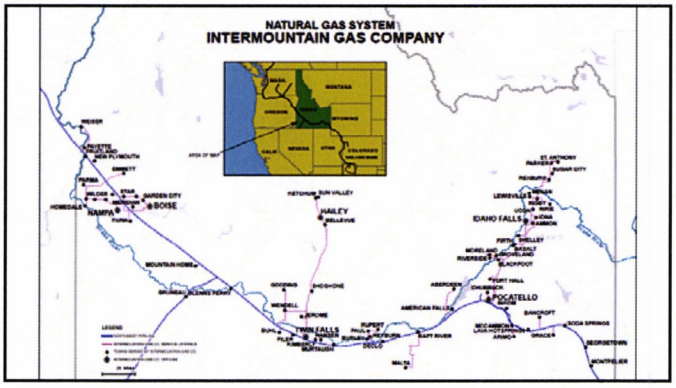

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BENEFITS OF AN IRP

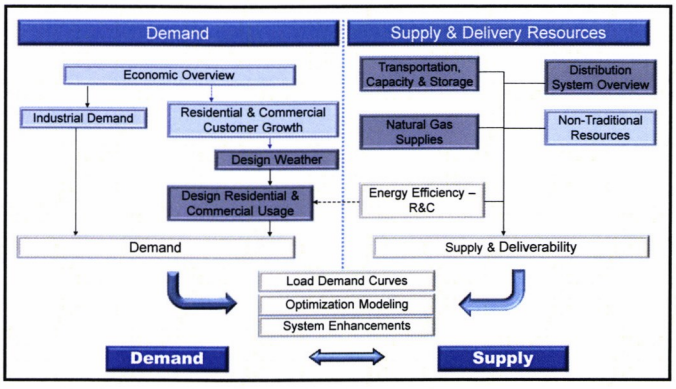
- Blueprint to meet the Company's firm customer demands over a five-year forecast period based on various assumptions
- Provides frequent updates to the projected growth on the Company's system
- Considers all available resources to meet the needs of the Company's customers on a consistent and comparable basis
- Helps to ensure Intermountain Gas Company will continue to provide reliable energy service while minimizing costs

9

IRP OVERVIEW

- Five year plan, updated every two years
- Forecasts demand
- Reviews all available supply options
- Utilizes an optimization model to provide the most efficient solutions

10



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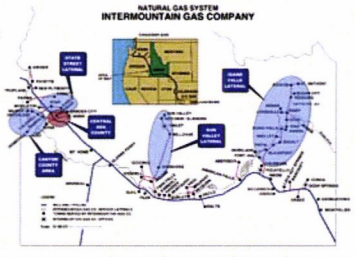
AREAS OF INTEREST (AOI)

- 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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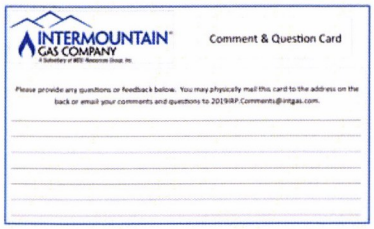
FEEDBACK SUBMISSIONS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Comment & Question Card

Please provide any questions or feedback below. You may physically mail this card to the address on the back or email your comments and questions to 2019IRP.Comments@intgas.com.

13

ENERGY EFFICIENCY RESULTS

KATHY WOLD
MANAGER, ENERGY EFFICIENCY

14

- Benefits of natural gas
- You want customers to use less? (Yes and no)
- *Potentially* how much less? Conservation **Potential** Assessment

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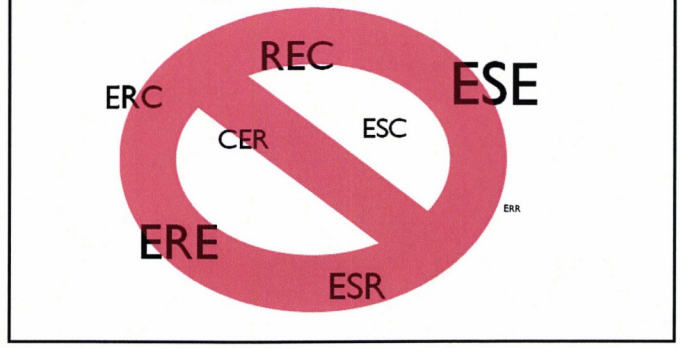
Gas is good. Amen.

16



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Rule of 3

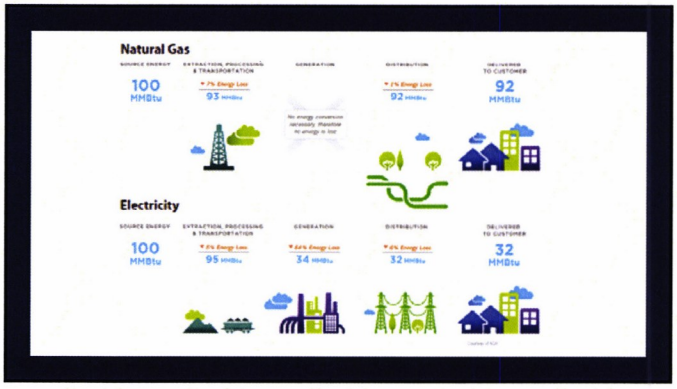
- Efficient
- Reliable
- Clean

18

Natural Gas is efficient

- Natural gas costs less to use than other major home energy sources. Households that use natural gas appliances for heating, water heating, cooking and clothes drying spend an average of $874 less per year than homes using electric appliances.
- The direct use of natural gas in America's homes and businesses achieves 91 percent energy efficiency.

19



20

Natural gas is

- Efficient
- Reliable
- Clean

21

Natural gas is reliable

- According to the U.S. Department of Transportation, pipelines are the safest form of energy transportation.
- At current consumption rates, the 28.7 Tcf of natural gas the U.S. produces annually will last nearly 100 years.
- Domestic gas production accounts for nearly 92 percent of all natural gas consumed in the United States.

22

Natural gas is

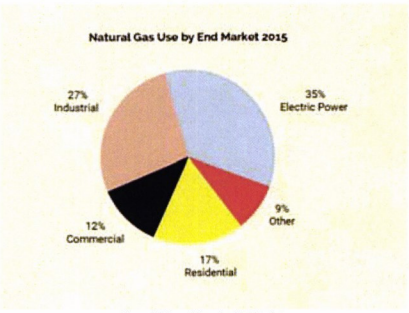
- Efficient
- Reliable
- Clean

23

Natural gas is clean

- Natural gas is the cleanest fossil fuel on the market today.
- Natural gas emits up to 56% fewer greenhouse gasses than coal for the same amount of electricity.
- Switching to natural gas, emissions from U.S. power plants hit a 27-year low last summer.

24



Source: U.S. Energy Information Administration

25

Natural gas is

- Efficient
- Reliable
- Clean

26

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.

27

WAIT….YOU JUST TOLD US ABOUT ALL THIS NATURAL GAS GOODNESS AND NOW YOU WANT US TO USE LESS? YES!

28

When we "acquire resources through the reduction of natural gas consumption due to increases in efficiency of energy use,"...you save money and energy!

Turn this:

Into this:

And Money! Did I mention you save money?!

29

AVAILABLE EQUIPMENT REBATES

Eligible Appliance*	Rebate
95% AFUE Natural Gas Furnace	$350
90% Efficiency Combo Radiant System	$1,000
80% AFUE Natural Gas Fireplace Insert	$200
70% FE Natural Gas Fireplace Insert	$100
.67 EF/ .68 UEF Natural Gas Water Heater	$50
.91 EF/ .92 UEF Condensing Tankless Water Heater	$150

*Minimum Efficiency

30

WHOLE HOME REBATE $1200

ENERGY STAR PARTNER

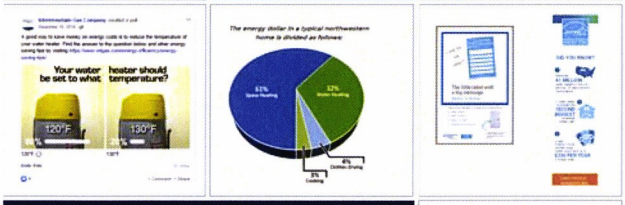
ENERGY STAR Certified home
(using natural gas for space and water heating)

and

75

HERS (Home Energy Rating System) Index score of 75 or lower

31



HOW DO WE PROMOTE EFFICIENT USE OF NATURAL GAS?

32

Conservation Potential Assessment
Final Results

INTERMOUNTAIN GAS COMPANY

33

CPA: CONSERVATION POTENTIAL ASSESSMENT WHAT IS IT?

- Comprehensive analysis of all viable conservation/EE measures and total savings that could be achieved
- Determines the most cost-effective energy efficiency measures
- A tool for EE program planning
- Provides energy savings inputs into the IRP

34

- **How can a potential study be used?**
  - **Resource planning:** Evaluate the impact of Energy Efficiency, Fuel Switching and Codes & Standards on long-term energy consumption and demand needs
  - **Identify opportunities:** Assess achievable DSM opportunities to improve DSM program planning and help meet long-term savings objectives, and determine which sectors, end-uses and measures hold the most potential
  - **Efficiency program planning:** Inform portfolio and program design considering funding level, market readiness and other constraints
- **How should a potential study *not* be used?**
  - Potential studies are *not* intended to give granular information about measures in specific segments, but rather give a macro view of efficiency potential in a jurisdiction
  - Potential studies are *not* meant to accurately forecast savings achieved through current programs in a given future year, but rather quantify the total potential savings that exist under specific program parameters

35

dunsky ENERGY CONSULTING

FRONTIER energy

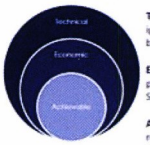
gti

36

STUDY OVERVIEW

POTENTIAL ASSESSMENT

- **Purpose:** Provide a realistic, high-level, assessment of the long-term energy efficiency potential that is technically feasible, cost-effective, and achievable through efficiency programs



Technical: Theoretical maximum savings opportunity, ignoring constraints such as cost-effectiveness and market barriers.

Economic: Applies economic considerations to technical potential, leaving only measures that are cost-effective. Screened on the Utility Cost Test (UCT).

Achievable: Applies market barriers to economic potential, resulting in an estimate of savings that can be achieved through efficiency program. Different scenarios are tested to examine their impacts on savings.

Considering **additional constraints**, utilities may decide to target a subset of the achievable potential for their planned programs.

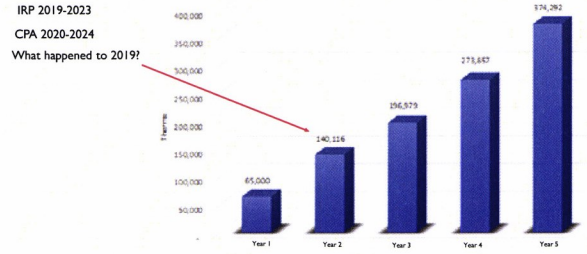
37

Estimated DSM Therm Savings
2017-2021 Integrated Resource Plan

IRP 2019-2023

CPA 2020-2024

What happened to 2019?



38

Three Scenarios used to assess achievable potential (2020-2039)

LOW

- **Low:** Applies low incentive levels (35% of incremental measure cots), but with no budget constraints and over a broader set of cost-effective measures – unconstrained budget
  - **Key scenario insights:** What level of saving can be achieved with a comprehensive offer, with incentives at the lower range?

BASE

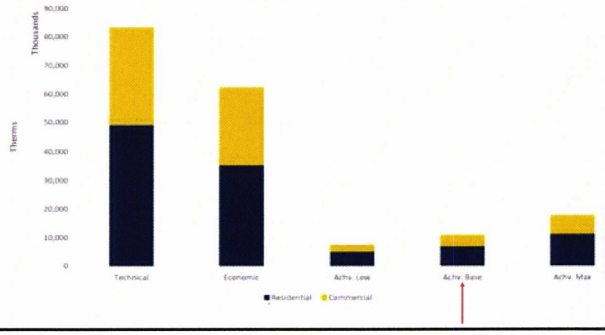
- **Base:** Standard program approaches, incentives increased to 50%, barrier reduction in yr6 – unconstrained budget
  - **Key scenario insights:** How much more savings can be expected with increased incentive levels?

MAX

- **Maximum:** Barrier-reducing program delivery, incentive levels at 65%, unconstrained budget/measures
  - **Key scenario insights:** How would improved program delivery increase savings (e.g. consumer education, contractor training and support, etc.)

39

Natural Gas Savings - Cumulative 2020-2024



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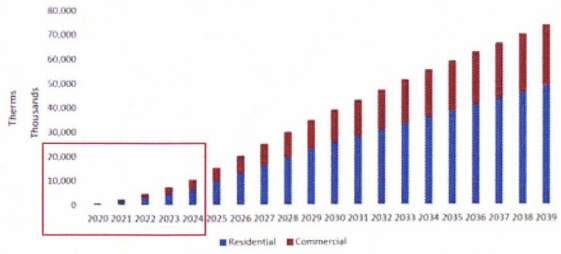
Base Scenario- Cumulative Savings



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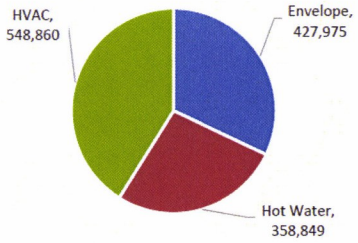
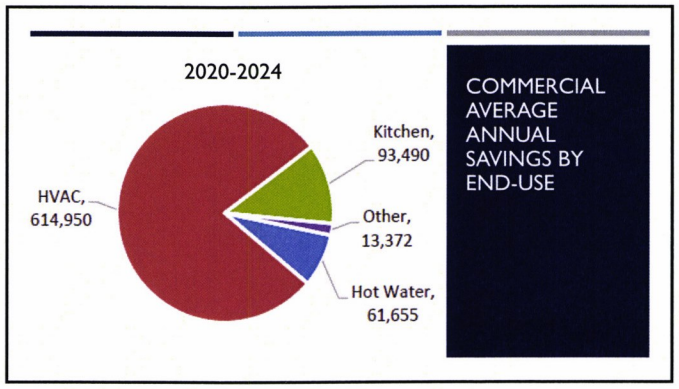
2020-2024



RESIDENTIAL AVERAGE ANNUAL SAVINGS BY END-USE

42



COMMERCIAL AVERAGE ANNUAL SAVINGS BY END-USE

43

2020-2024

Measure	Average Annual Savings ('000 Therms)	Lifetime Savings ('000 Therms)
Thermostats	458	3,667
Insulation	332	7,499
High Efficient Shower Head	248	2,480
Faucet Aerators	78	782
New Construction	76	2,167
Duct Insulation	68	1,697
Thermostatic Restrictor Shower Valve	32	320
Insulated Door	20	493
Boilers	15	376
Fireplace	3	70

TOP 10 RESIDENTIAL MEASURES BASE SCENARIO

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2020-2024

Measure	Average Annual Savings ('000 Therms)	Lifetime Savings ('000 Therms)
Boilers	246	6,146
Demand Control Ventilation	86	858
Boiler Reset Control	57	861
Fryer	50	598
Energy Recovery Ventilator (ERV)	49	680
Attic/Roof Insulation	45	1,513
Low Flow Faucet Aerator	26	260
Kitchen Demand Control Ventilation	20	296
Efficient Cookware	19	56
High Efficiency Unit Heaters	17	198

TOP 10 COMMERCIAL MEASURES BASE SCENARIO

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ACHIEVABLE BASE SCENARIO - PORTFOLIO COST-EFFECTIVENESS

Sector	UCT			TRC		
	Low	Base	Max	Low	Base	Max
Residential	1.78	1.74	1.46	1.33	1.36	1.31
Commercial	2.40	2.21	1.81	1.53	1.49	1.38
Total	**1.97**	**1.90**	**1.33**	**1.40**	**1.41**	**1.33**

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ACHIEVABLE BASE SCENARIO – PORTFOLIO BUDGET AND UNIT COST

Program	Budget ($M)			$/Therm		
	Low	Base	Max	Low	Base	Max
Residential	2.75	4.10	9.48	2.80	3.07	4.05
Commercial	1.20	2.17	4.36	2.51	2.77	3.36
Total	**3.95**	**6.26**	**13.85**	**2.70**	**2.96**	**3.69**

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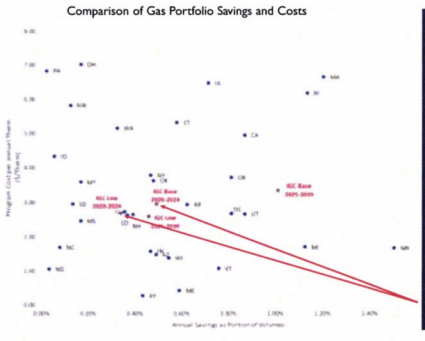

In the first 5 years of the study, Low and Base Scenarios savings and unit costs would place IGC among average utilities, with savings ranging between 0.4% and 0.6% of annual volumes, at unit costs around $3/therm.

48

Comparison of Gas Portfolio Savings and Costs

Under the Base Scenario, IGC could evolve into one of the leading utilities, while maintaining its unit costs at a reasonable level. In order to accomplish this, investments and sustained growth in the residential home retrofit market will be critical.

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QUESTIONS?

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LOAD DEMAND CURVES

ERIC WOOD
SUPERVISOR, GAS SUPPLY

51

LOAD DEMAND CURVE KEY VARIABLES

- Based on Design Weather Conditions
- Low, Base and High Growth Core Market Customer Projections
- Customer Usage Per Degree Day
- MDFQ for Large Volume Customers

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LOAD DEMAND CURVE

- Load Demand Curve: A forecast of Daily Gas Demand Using 'Design' Temperatures, and Predetermined 'Usage Per Customer'
- Designed to Measure Distribution Capacity at Our 5 Areas of Interest (AOIs)
- To Measure Total Company for Upstream Capacity

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LOAD DEMAND CURVE

- Based on Current Resources or Resources Scheduled to be Available During the IRP Period
- Remedies for Any Constraints Will be Identified Later
- Storage Management

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PEAK SEASON CORE MARKET LOAD DEMAND CURVE METHODOLOGY

Usage/Customer per Degree Day

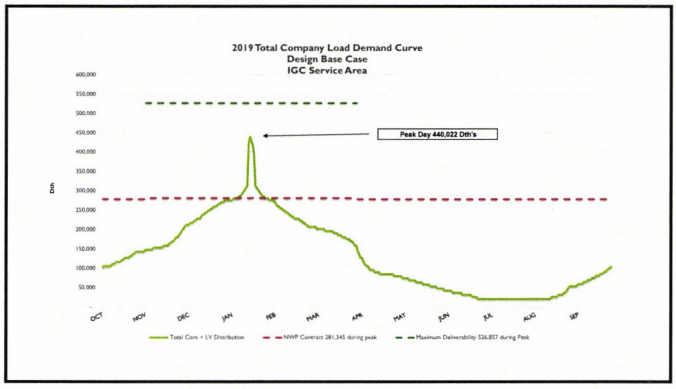
Forecasted Core Customers

Total Daily Usage

Large Volume MDFQ

Total Daily Usage

55



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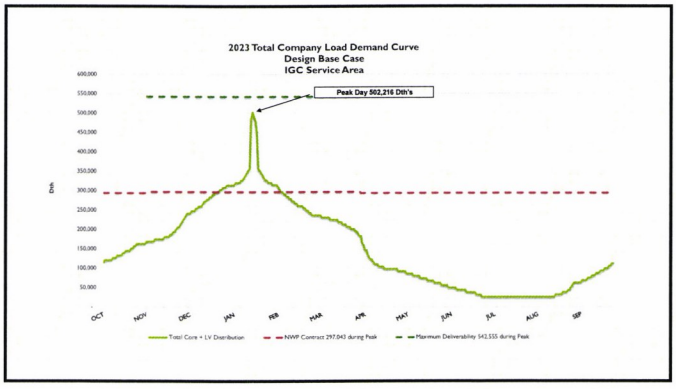

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DESIGN CAPACITY OF DISTRIBUTION SYSTEM

- Idaho Falls Lateral
- Sun Valley Lateral
- Canyon County Lateral
- State Street Lateral
- Central Ada County

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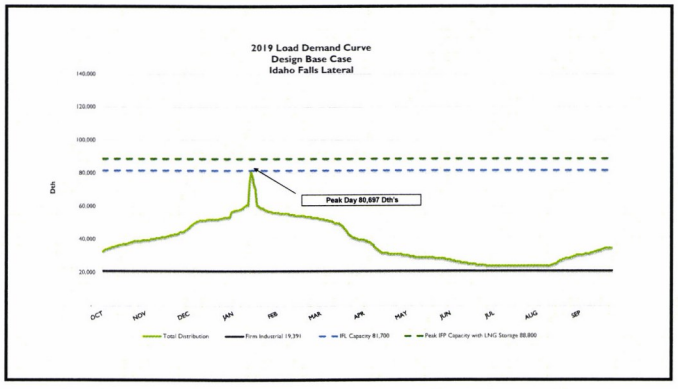

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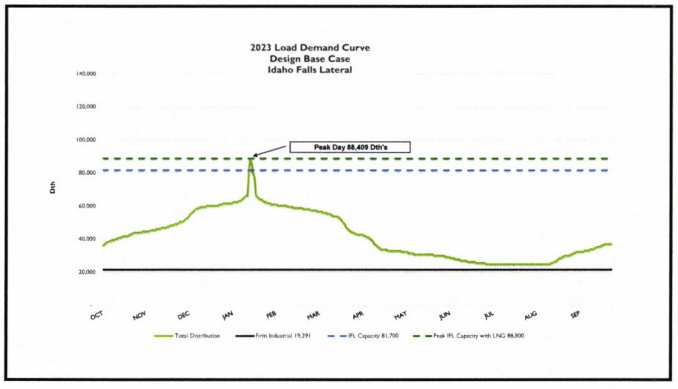

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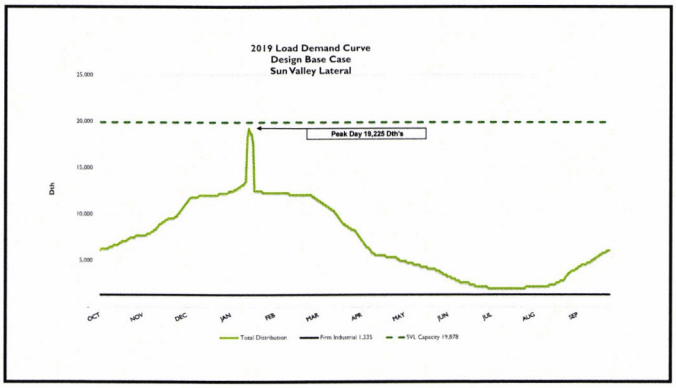

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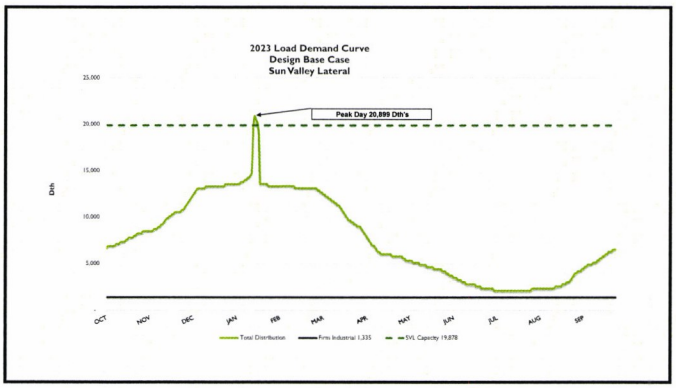

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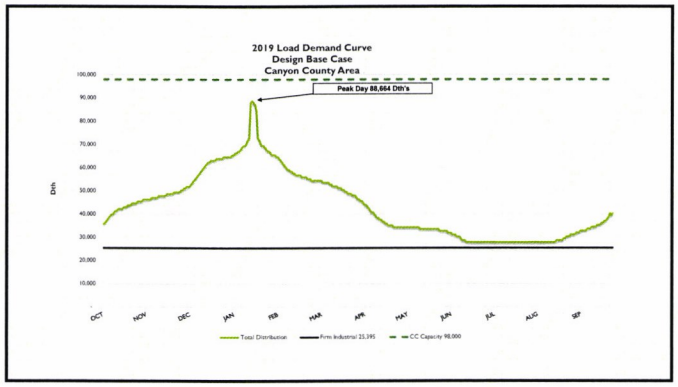

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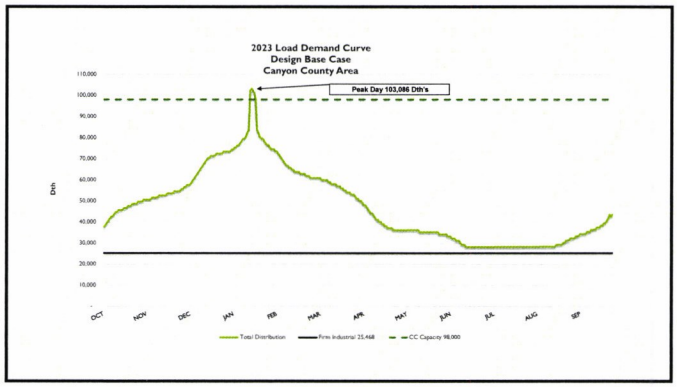

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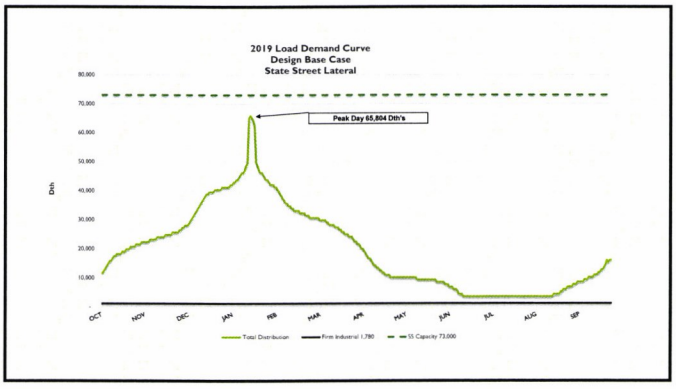

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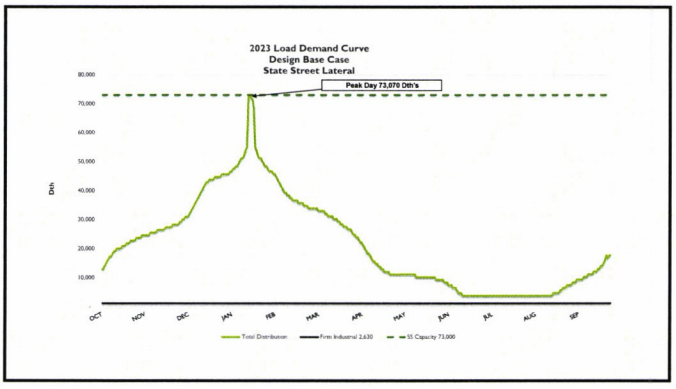

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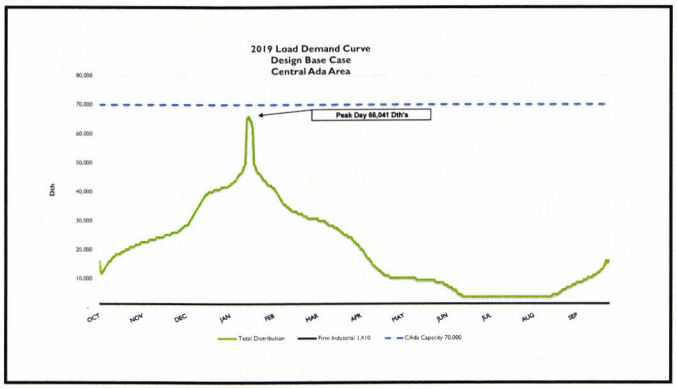

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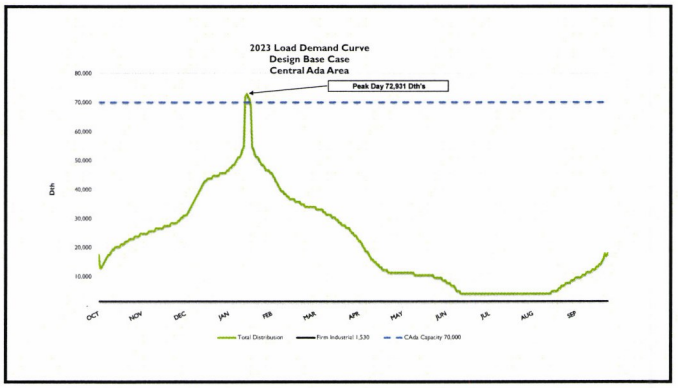

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QUESTIONS?

69

IRP MODEL STRUCTURE OVERVIEW

Draft Design Base Results

BORIS PROKOP
BORISMETRICS

70

- **IGC IRP Model "Integrates"/Coordinates all the main functional elements of IGC operation:**
  - Gas Demand/Load, how much & where is gas consumed, "Load Duration Curve" (LDC) by area(node).
  - Gas Supply, from where (area/node), how much and what price is gas supplied to meet demand (LDC).
  - Gas Transport, how does gas move from supply node/area to demand(node/area) given pipeline(arc) size and prices.
  - Demand Side Management (DSM) , cost effective energy efficiency is used to reduce demand
  - Local Gas Distribution, local lateral sizing is explicitly modeled to meet demand & ensure reliability
  - The IRP model utilizes "optimization modeling" to determine the least cost manner to have loads served by supply, transport, DSM & laterals.

All results presented here are draft subject to IGC review.

Borismetrics

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WHAT IS OPTIMIZATION?

- IGC IRP model utilizes "optimization"
- Utilizes a ***standard*** mathematical technique called "linear programming" …to optimize over all possible combinations.
- Utilizes software "LINGO" programming language similar to linear algebra, (ie a*x>=b)
- Excel for input and output so easy to use
- Massive amount of control and output by period by resource
- Selects from a mix of resources over planning horizon to meet forecasted loads
- Portland General, Avista has used similar techniques by Borismetrics for resource planning & dispatch

Borismetrics

72

LINEAR PROGRAMMING

- Mathematical Technique developed post WW2
- Most used Operations Research Technique (PCs) to optimize
- Way of allocating scarce resources to competing activities in best possible way (common in IRP)
- Was AI before AI
- Finds best solution across all combinations
- Find least cost overall inputs.
- Utilizes a "Gap Analysis" (Fill variables) to detect need for new resources: lateral, transport, supply

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MODEL ELEMENTS

- Functional components:
  - Demand forecast (LDCs)
  - Traditional supply resources
    - Existing and potential gas supplies by basin
    - Storage resources
    - Transportation capacity resources
  - Price forecast
  - Non-traditional supply e.g., new distribution capacity, fuel oil, DSM etc.

Borismetrics

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MODEL ELEMENTS

- Demand represented by Load Duration Curves
  - Loads forecast by demand node
  - Demand curves ordered by highest to lowest into LDCs
  - LDCs summarized into 12 periods that are distinct but daily usage is similar
  - Demand Scenarios by weather (Design/Normal) & Growth (Low, Base, High)
- Structure used nodes and arcs
- Supply/demand at nodes; transport at arcs

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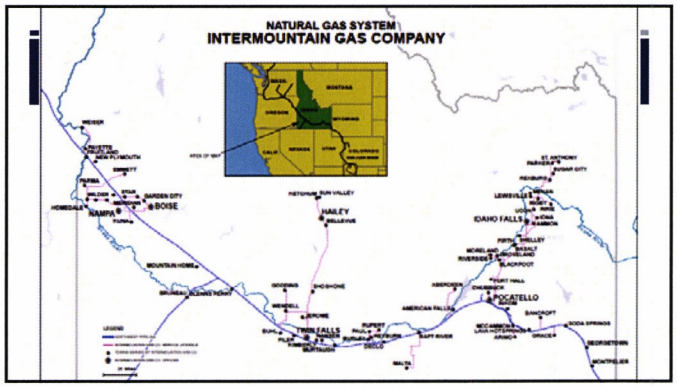

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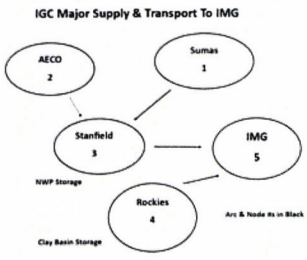
MODEL STRUCTURE

Arcs(Transport) & Nodes(Supply/Demand Areas to Idaho (IMG))



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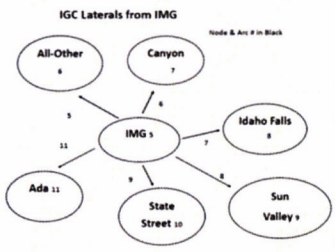
MODEL STRUCTURE

Arcs (Transport) & Nodes(Supply/Demand Areas to Laterals from (IMG))



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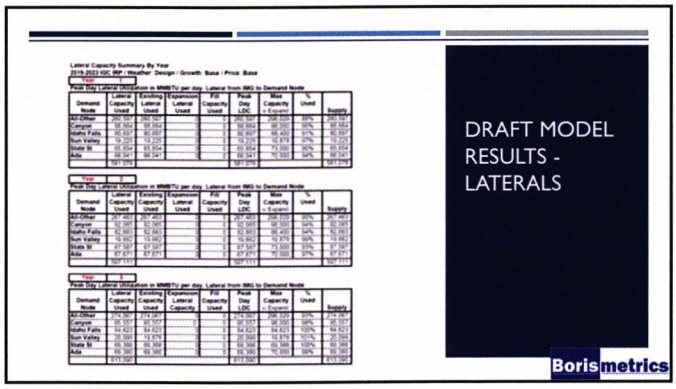

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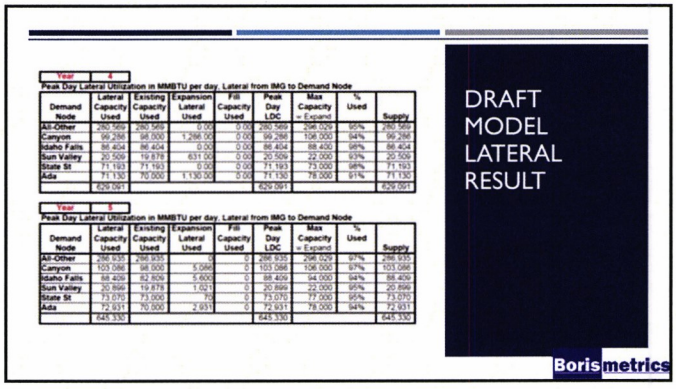

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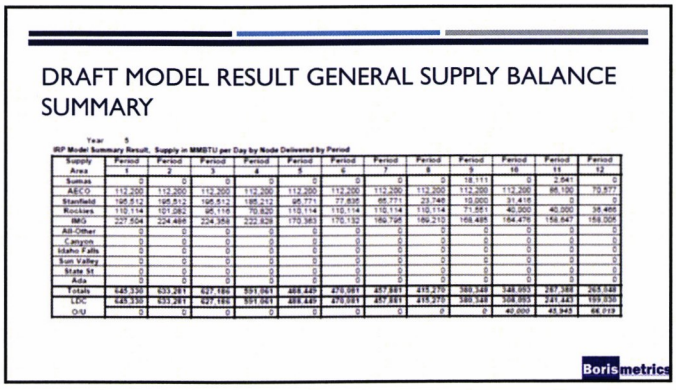

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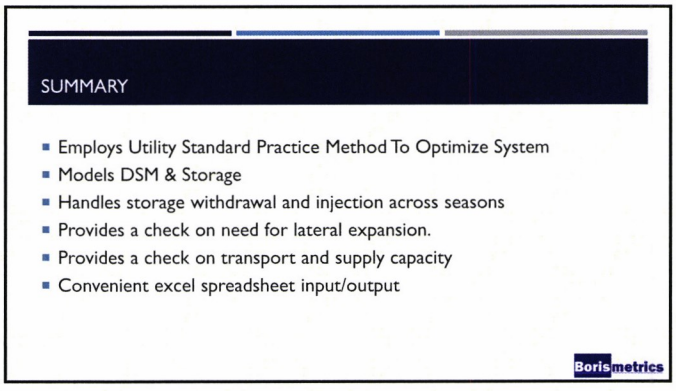

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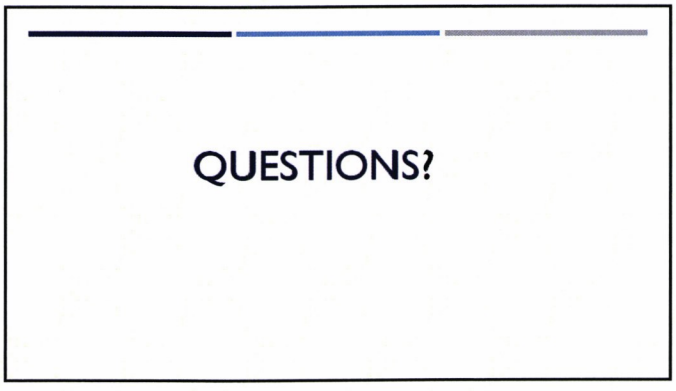

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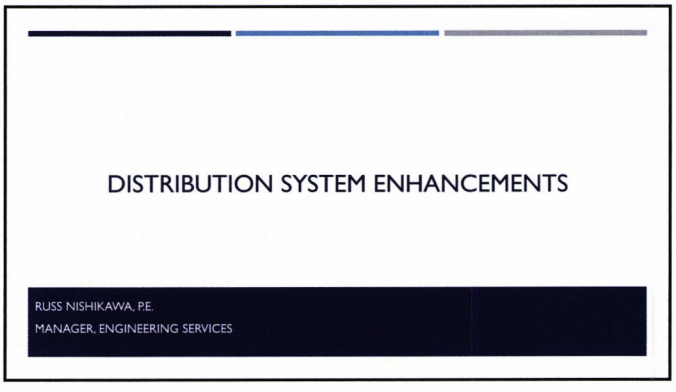

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FUTURE SYSTEM CAPACITY ENHANCEMENTS

- Canyon County Area
- Sun Valley Lateral
- Central Ada County
- State Street Lateral
- Idaho Falls Lateral

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CANYON COUNTY CAPACITY ENHANCEMENTS

- 6" Orchard Avenue Extension
- 12" Ustick Caldwell Betterment Phase II
- 8" Happy Valley Extension

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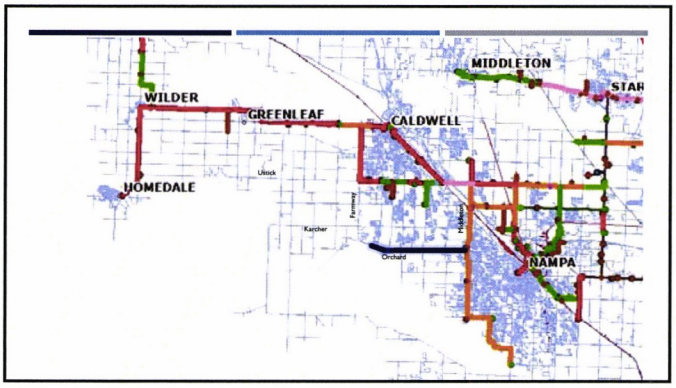
CANYON COUNTY CAPACITY ENHANCEMENTS

6" Orchard Avenue Extension

- Construction to be completed Fall of 2020
- 4.5 miles of 6" steel pipe
- Location specific betterment to meet growth demands in southern Caldwell

87



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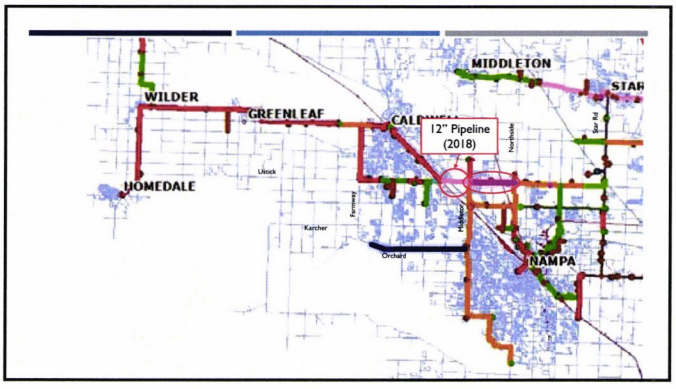
CANYON COUNTY CAPACITY ENHANCEMENTS

12" Ustick Caldwell Betterment Phase II

- Construction to be completed Fall of 2021
- 2 miles of 12" steel pipe
- 8% capacity increase to the overall system

89



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CANYON COUNTY CAPACITY ENHANCEMENTS

8" Happy Valley Extension

- Construction completed Fall of 2022
- 2 miles of 8" steel pipe
- Location specific betterment to meet growth demands in southern Nampa

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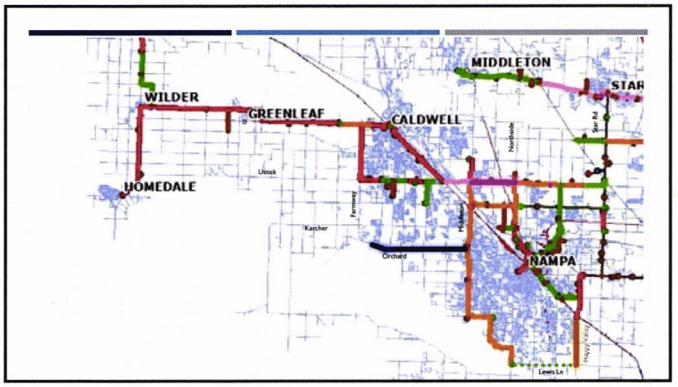

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SUN VALLEY LATERAL CAPACITY ENHANCEMENT

- Lateral extends from Jerome to Bellevue
- 68 miles of 8" pipeline
- Jerome Compressor Station

93

SUN VALLEY LATERAL CAPACITY ENHANCEMENT

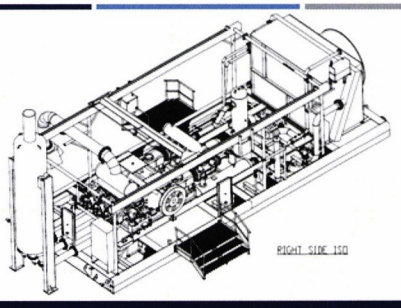
Previously Installed the Jerome Compressor Station

- Constructed in 2011
- 6 miles north of Jerome
- 15% capacity increase

94

SUN VALLEY LATERAL CAPACITY ENHANCEMENT

95



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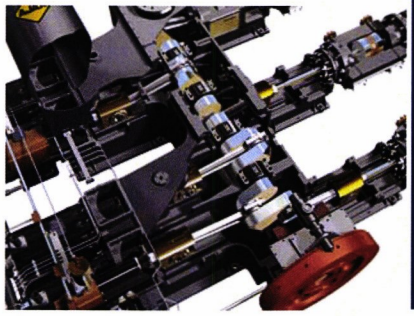


SUN VALLEY LATERAL CAPACITY ENHANCEMENT

97

SUN VALLEY LATERAL CAPACITY ENHANCEMENT

Shoshone Compressor Station

- Construction to be completed Fall of 2021
- Installed near mile post 32
- 10% capacity increase for the existing system

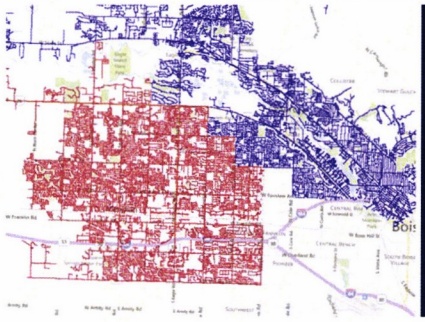
98

SUN VALLEY LATERAL CAPACITY ENHANCEMENT

Shoshone Compressor

- Preliminary design:
  - 1,400 RPM (high speed)
  - 1,100 HP
  - single stage

99



CENTRAL ADA COUNTY

100

CENTRAL ADA COUNTY CAPACITY ENHANCEMENT

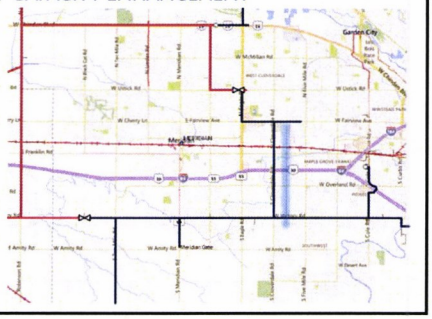
Previously Completed the 8" Cloverdale Betterment

- Construction in 2018
- 3 miles of 8" pipeline
- 12% capacity increase

101

CENTRAL ADA COUNTY CAPACITY ENHANCEMENT

The Cloverdale Betterment is a piece of the larger picture to integrate distribution systems between Nampa, Meridian and Boise



102

CENTRAL ADA COUNTY CAPACITY ENHANCEMENT

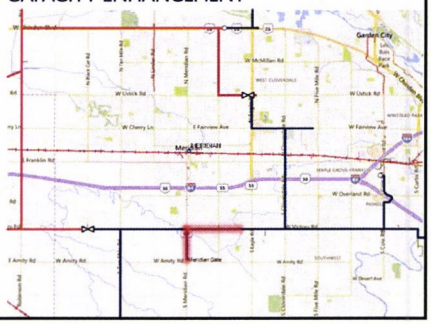
10" Victory Retest – Phase I

- Construction in 2021
- Retest 2.5 miles of 10" pipeline
- 5% capacity increase

103

CENTRAL ADA COUNTY CAPACITY ENHANCEMENT

Continues the process of system integration, increases system capacity, and increases model pressure into Boise IPS



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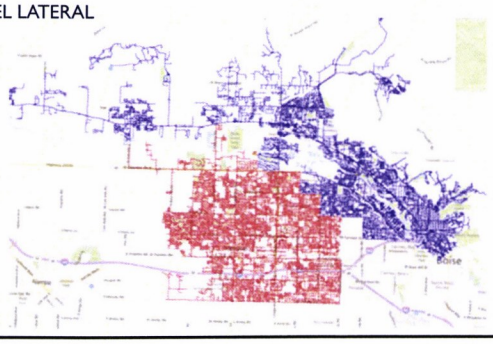
STATE STREEL LATERAL



105

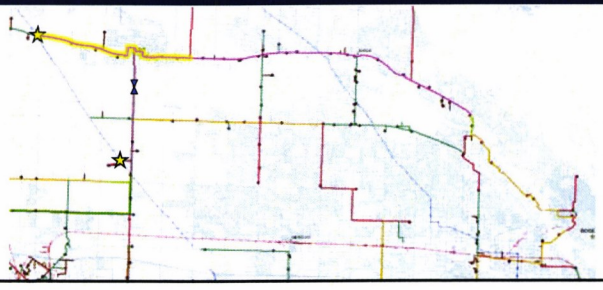
STATE STREET LATERAL CAPACITY ENHANCEMENT

Currently Completing the 12" Retest-Phase I

- Work complete in Fall 2019
- Retest 6.6 miles of 12" pipeline
- 9% capacity increase
  (change from previous IRP due to model dynamics)

106

STATE STREET LATERAL CAPACITY ENHANCEMENT



107

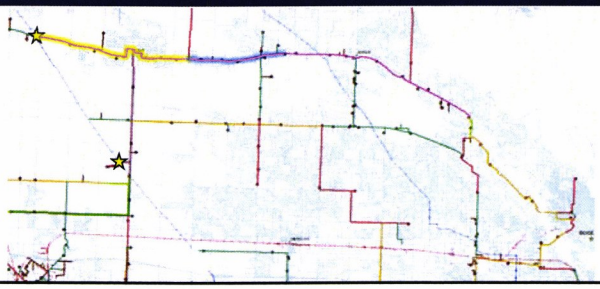
STATE STREET LATERAL CAPACITY ENHANCEMENT

12" Retest-Phase II

- Work to be completed in 2022
- Retest 3 miles of 12" pipeline
- 5-6% capacity increase

108

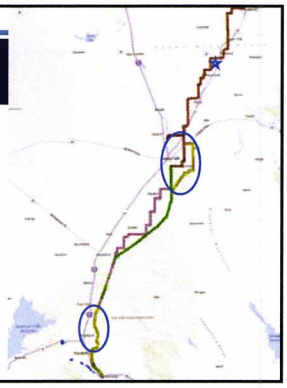
STATE STREET LATERAL CAPACITY ENHANCEMENT



109

IDAHO FALLS LATERAL CAPACITY ENHANCEMENT

- Begins in Pocatello
- Ends in St. Anthony
- 104 miles *(not including loop lines)*



110

IDAHO FALLS LATERAL CAPACITY ENHANCEMENT

Rexburg LNG Facility Storage Expansion

- Install second cryogenic storage tank
- Work to be completed in 2022
- 6% capacity increase

111

IDAHO FALLS LATERAL CAPACITY ENHANCEMENT

112

QUESTIONS?

113

SUPPLY EQUALS DEMAND

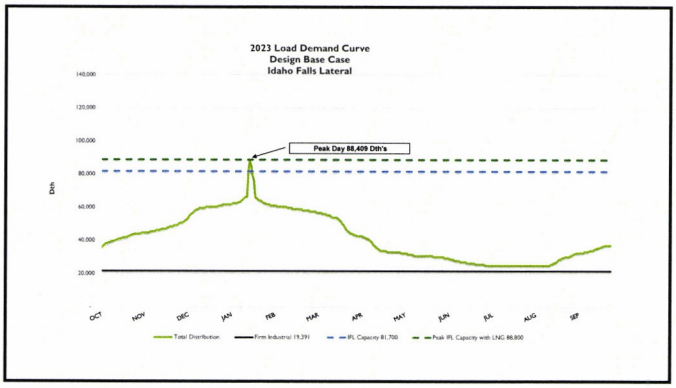
ERIC WOOD
SUPERVISOR, GAS SUPPLY

114

SUPPLY = DEMAND

- Review Post Betterment Projects
- Ensure that Supply Equals Demand

115



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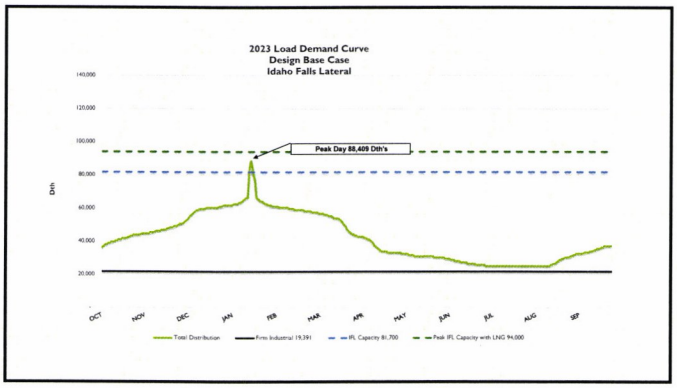

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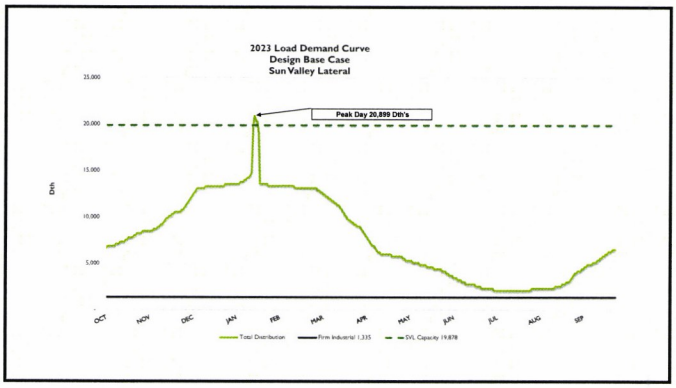

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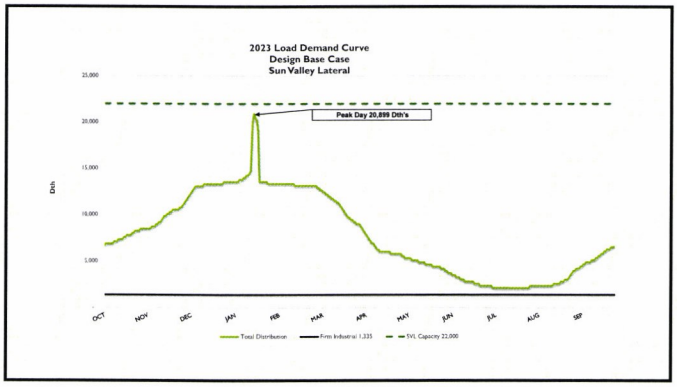

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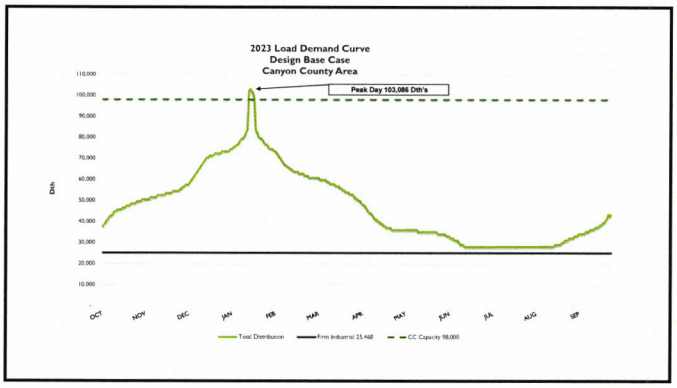

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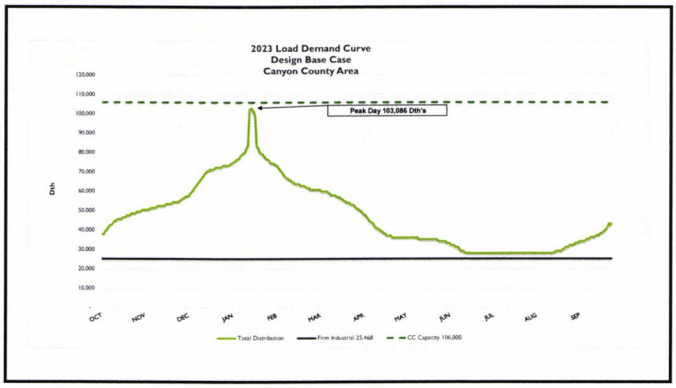

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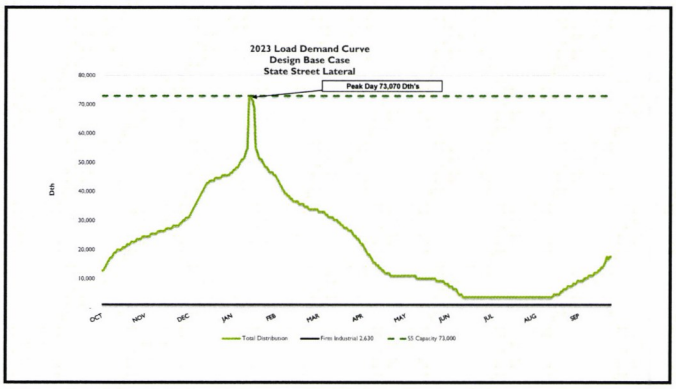

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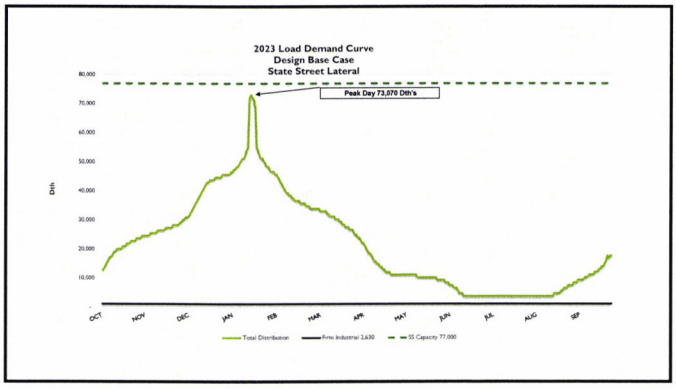

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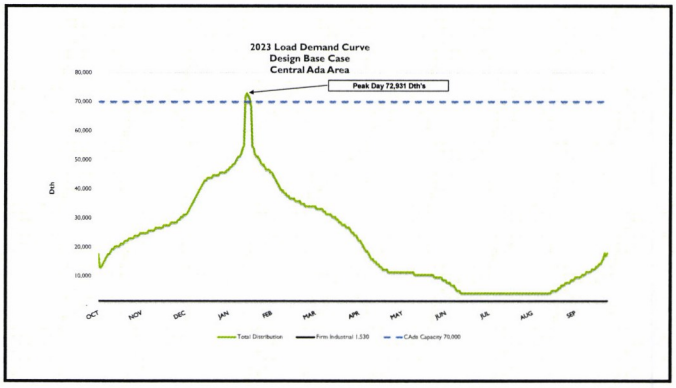

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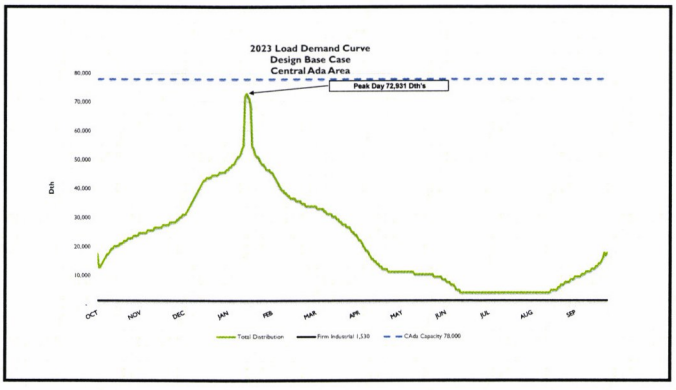

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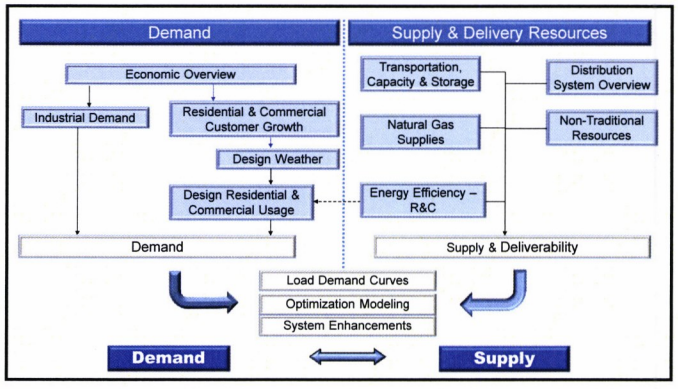

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QUESTIONS?

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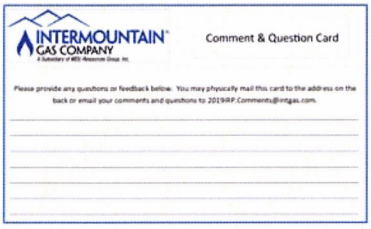
FEEDBACK SUBMISSIONS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Comment & Question Card

Please provide any questions or feedback below. You may physically mail this card to the address on the back or email your comments and questions to 2019IRP.Comments@intgas.com.

- Comment Cards
- 2019IRP.Comments@intgas.com
- Please provide comments and feedback within 10 days

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