UTAH MUNICIPAL POWER AGENCY

Levan ◆ Manti ◆ Nephi ◆ Provo ◆ Salem ◆ Spanish Fork

2017 UMPA ANNUAL MEMBER CONFERENCE

Zermatt Resort
784 West Resort Drive, Midway, Utah
435-709-9547

All Events are held in the Bernese Event Center

THURSDAY, April 20, 2017

Noon	Lunch & Registration
1:00 pm	Welcome - *Sterling Rees, Chairman, UMPA Board of Directors, Salem City Council*
1:15 pm	2017 Utah Legislative Session & Other Issues Facing Utah Cities – *Roger Tew, Interim Executive Director, Utah League of Cities and Towns*
2:00 pm	Electricity 101 - *Travis Ball, Director of Energy, Provo City* *Kelly Peterson, Power Superintendent, Spanish Fork City* *Tad Smallcomb, Engineering Manager, Provo City*
2:50 pm	Break
3:10 pm	Demonstration Trailer - *Clark Crook, Power Superintendent, Salem City* *Blake DeMill, Power Superintendent, Manti City* *Rust Finlinson, Electric Division Operations Manager, Nephi City* *Jason Worwood, Power Superintendent, Levan Town*
3:45 pm	The Anatomy of High Trust Relationships - *Dr. Henry "Hank" Smith, Motivational Speaker & Corporate Trainer*
4:45 pm	Adjourn
6:00 pm	Dinner *Welcome – Sterling Rees, Chairman, UMPA Board of Directors, Salem City Council* *Introduction – Dr. Douglas Smoot, UMPA Consultant* *Guest Speaker: The Honorable Gary R. Herbert, Governor of the State of Utah* *Cougar Corner: Tanner Mangum, QB, BYU & Butch Pau'u, LB, BYU*

FRIDAY, April 21, 2017

7:30 am	Breakfast
8:30 am	Welcome - *Sterling Rees, Chairman, UMPA Board of Directors, Salem City Council*
8:35 am	Federal Legislative Issues - *Desmarie Waterhouse, Vice President of Legislative Issues, APPA*
9:20 am	UAMPS Carbon Free Project - *Doug Hunter, CEO, Utah Associated Municipal Power Systems (UAMPS)*
10:00 am	Break
10:15 am	West Valley Plant - *Jerame Blevins, Power Plant Manager, NAES*
10:30 am	Provo Power Plant - *Ken Green, Business Development, Wheeler Machinery* *Jason Soares, Project Manager, Wheeler Machinery*
10:45 am	BYU Cogeneration Facility - *Paul Greenwood, Director of Utilities, Engineering & Maintenance, BYU*
11:00 am	"Atoms for Humanity: Why, and How, We Should Pursue Nuclear Power" *Michael Shellenberger, President, Environmental Progress*
Noon	Lunch

UMPA Business Meeting

1:00 pm	Past Accomplishments - *Layne Burningham, COO/General Manager, UMPA*
1:20 pm	FY 2018 Budget - *Marianne Shepherd, Financial & Information Manager, UMPA*
1:40 pm	Existing Resources & Transmission - *Scott Lynsky, Operations Manager, UMPA*
2:00 pm	UMPA's Avoided Cost Study - *Don Gruenemeyer, President, Sawvel & Associates*
2:30 pm	Break
2:45 pm	Resource Modeling - *Jake Chrisman, Marketer/Operations Analyst, UMPA*
3:05 pm	Future Power Supply - *Kevin Garlick, Power Resource Manager, UMPA*
3:25 pm	Future Challenges & Path Forward - *Layne Burningham , COO/General Manager, UMPA*
4:00 pm	Adjourn
4:15 pm	UMPA Board Meeting – *Neuchatel Room*
6:00 pm	Dinner

SATURDAY, April 22, 2017

7 - 8:30 am	Breakfast
9:00 am	Golf Outing – Homestead Golf Course – Shotgun Start – Provided by Sponsors

Platinum

Wheeler Power Systems CAT

Jennings Strouss Attorneys at Law

Gold

Sawvel and Associates, Inc. Consultants and Engineers

NAES

Wells Fargo Securities

CCS

Chapman and Cutler LLP Attorneys at Law - Focused on Finance®

Bank of America Merrill Lynch

Zions Public Finance, Inc.

Tenaska Power Services Co.

Miller General Contractors

Silver

elevate PROMO | PRINT | DESIGN

Trinity Consultants

Utah Municipal Power Agency

Current Resources & Transmission Systems

April 21, 2017

UMPA'S Current Resource Portfolio:

Ownership:

- Hunter 1 Unit
- Bonanza Unit
- Member Generation – Behind the Meter
- West Valley Power Plant

Contracts:

- Colorado River Storage Projects (CRSP)
- Deer Creek
- PacifiCorp Long-Term
- Deseret Generation & Transmission
- Windward Wind Generators

Market – Economy Purchases

Hunter Unit 1

446 MW

- Coal Fired:
  Castle Dale, Utah
- UMPA's Allocation:
  32 MW in Jul & Aug
  27 MW other months
- Base Load
- 11.5% of UMPA's Energy Requirements in FY 2016

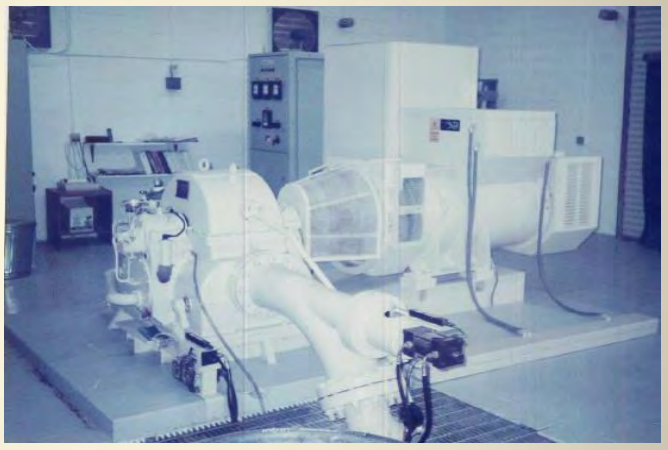
Bonanza Unit

458 MW

- Coal Fired:
  Near Vernal, Utah
- UMPA's Allocation:
  34 MW
- Base Load
- 16.7% of UMPA's Energy Requirements in FY 2016

Member Generation - Hydro

- Levan:
  Base Load
  Capacity .32 MW
  0.02% of FY2016



- Manti:
  Base Load
  Capacity 2.2 MW
  0.27% of FY2016

- Nephi:
  Base Load
  Capacity 0.9 MW
  0.08% of FY2016

Member Generation – Provo I/C Engines

(Decommissioned – June 2016)

- Natural Gas & Diesel:
  (95%) (5%)
  Provo, Utah
- Generation Capacity:
  10 MW
  4 Units @2.5 MW each
- Peaking - Reserves, Line Charge Management
- 0.05% of UMPA's Energy Requirements in FY 2016

West Valley Power Plant

- Natural Gas:
  West Valley, Utah
- Generation Capacity:
  200 MW
  5 Units @ 40 MW each
- Peaking
- 0.0% of UMPA's Energy Requirements in FY 2016
- UMPA purchased West Valley August 1, 2016

Colorado River Storage Projects (CRSP)

- Hydro Generation:
  - Glen Canyon, AZ
  - Flaming Gorge, UT
  - Aspinall, CO
- UMPA's Allocation:
  - 45 MW Summer
  - 58 MW Winter
- Base, Intermediate, and Peaking
- 20.4% of UMPA's Energy Requirements in FY 2016

Deer Creek

5 MW

- Hydro Generation:
  Provo Canyon, Utah
- UMPA's Allocation:
  1 MW to 4 MW
  Summer Season (Apr – Sep)
- Base Load
- 0.6% of UMPA's Energy Requirements in FY 2016

PacifiCorp Long-Term:

Source – PacifiCorp's System

UMPA's Allocation

25 MW – Oct to May

40, 75, 59, 34 MW – Summer Months

Intermediate Load

13.6% of UMPA's Energy Requirements in FY2016

Terminates – June 30, 2017

Deseret Generation & Transmission:

UMPA's Allocation

56 MW – Bonanza Unit – Intermediate & Peak

24 MW – Hunter Unit 2 – Base Load

11.2% of UMPA's Energy Requirements in FY2016

Terminates – December 31, 2019

Windward Wind Generation

5 Turbines – 5 kW to 180 kW

Spanish Fork

0.03% of UMPA's Energy Requirements in FY 2016

Renew Choice

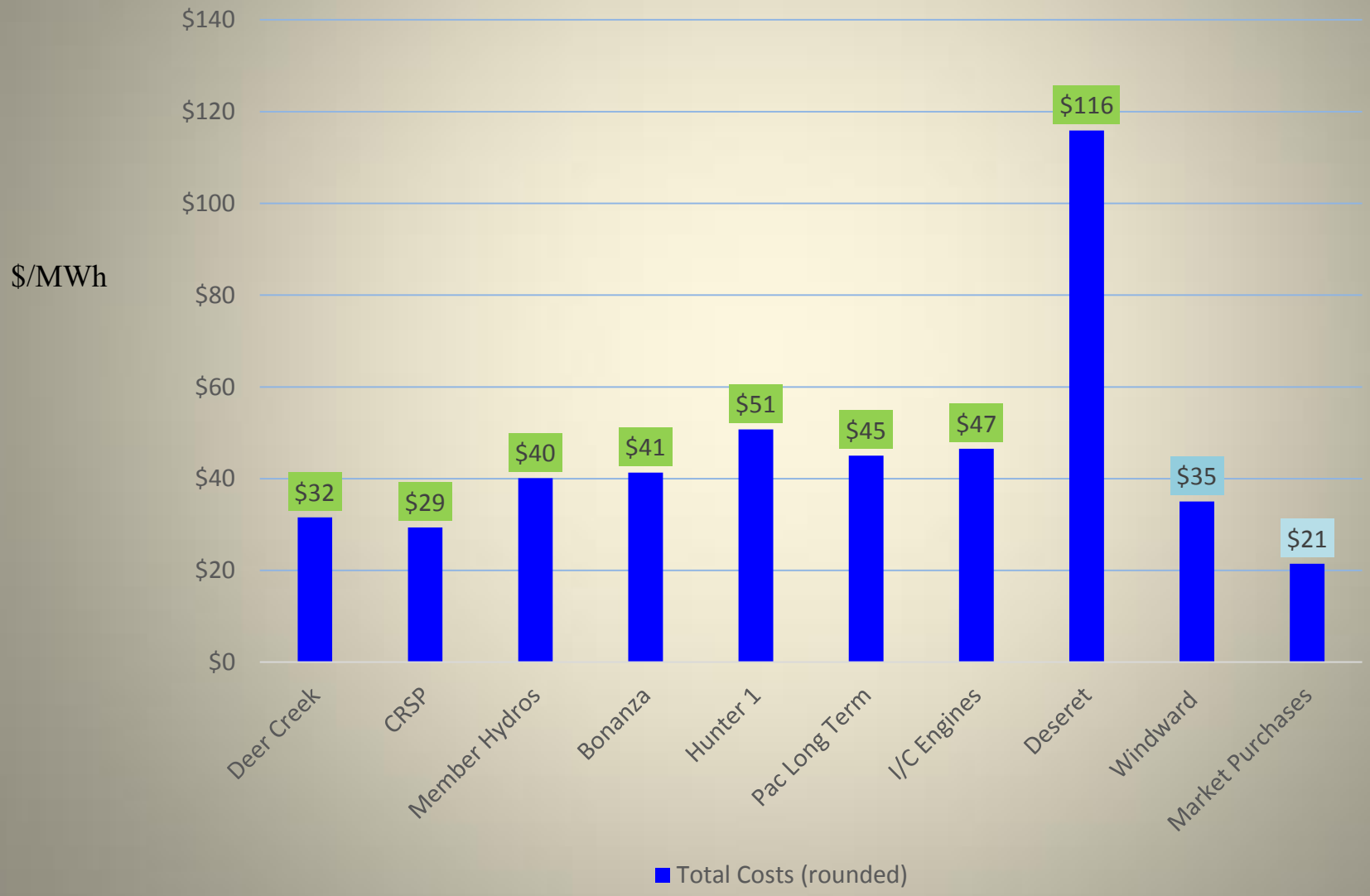
Market – Off System Purchases

- Day Ahead & Real-Time
- Transaction Points

  Mona, UT
  Bonanza, UT
  Vernal, UT
  Four Corners, NM
  Craig, CO
  Glen Canyon, AZ
  Dave Johnston, WY

- 25.6% of UMPA's Energy Requirements in FY2016

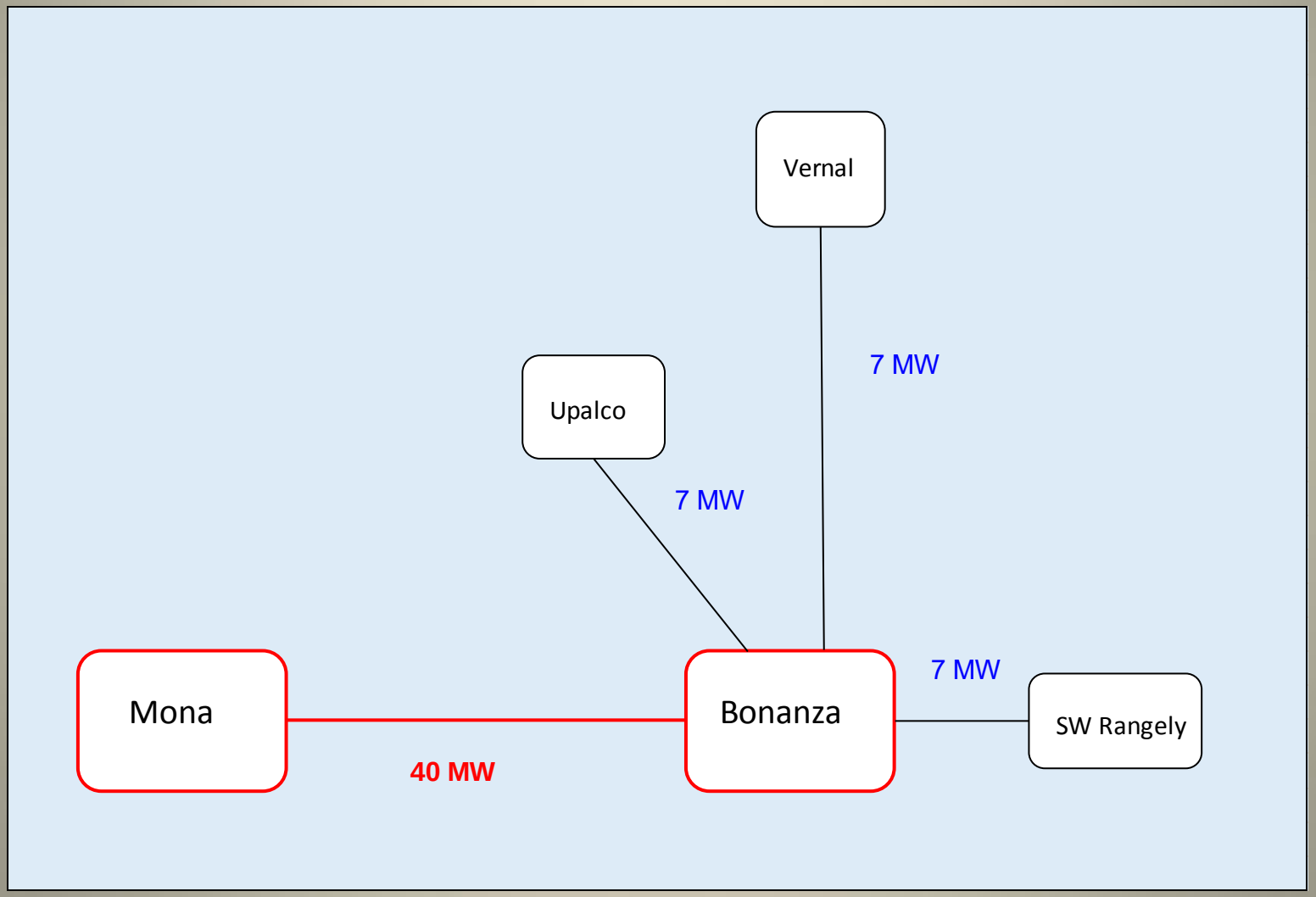
UMPA's Total Cost by Resource
FY 2016



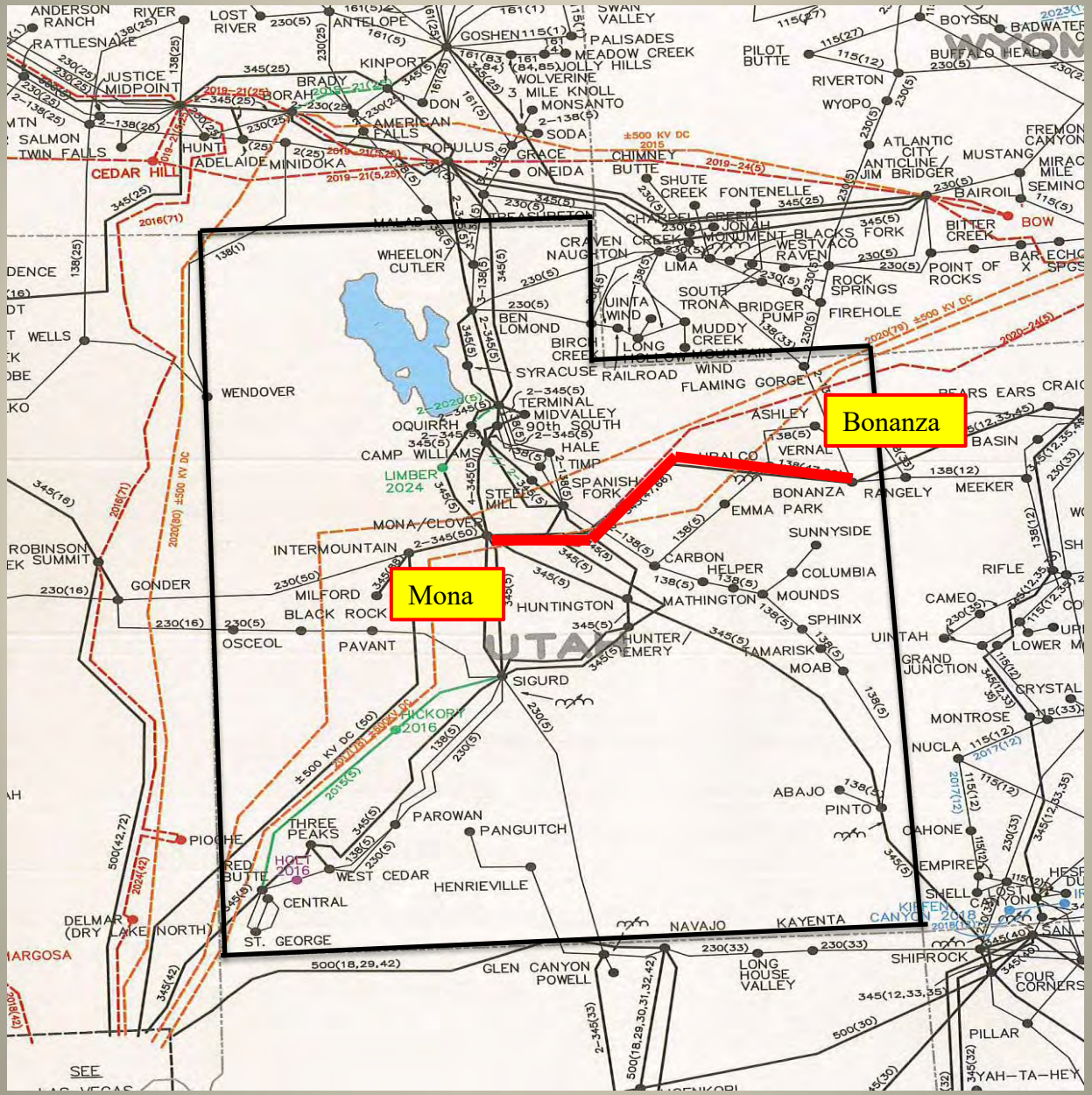
UMPA's Transmission Ownership/Rights

1. Bonanza Transmission Project
2. PacifiCorp's Transmission System
3. Western's All Federal Transmission System

Bonanza Transmission Project



Bonanza – Mona Transmission Line



PacifiCorp's Transmission System

Transmission Service and Operating Agreement
(TSOA)

UMPA's Points of Receipt

Mona
Hunter

Provo, Nephi
Manti, Levan

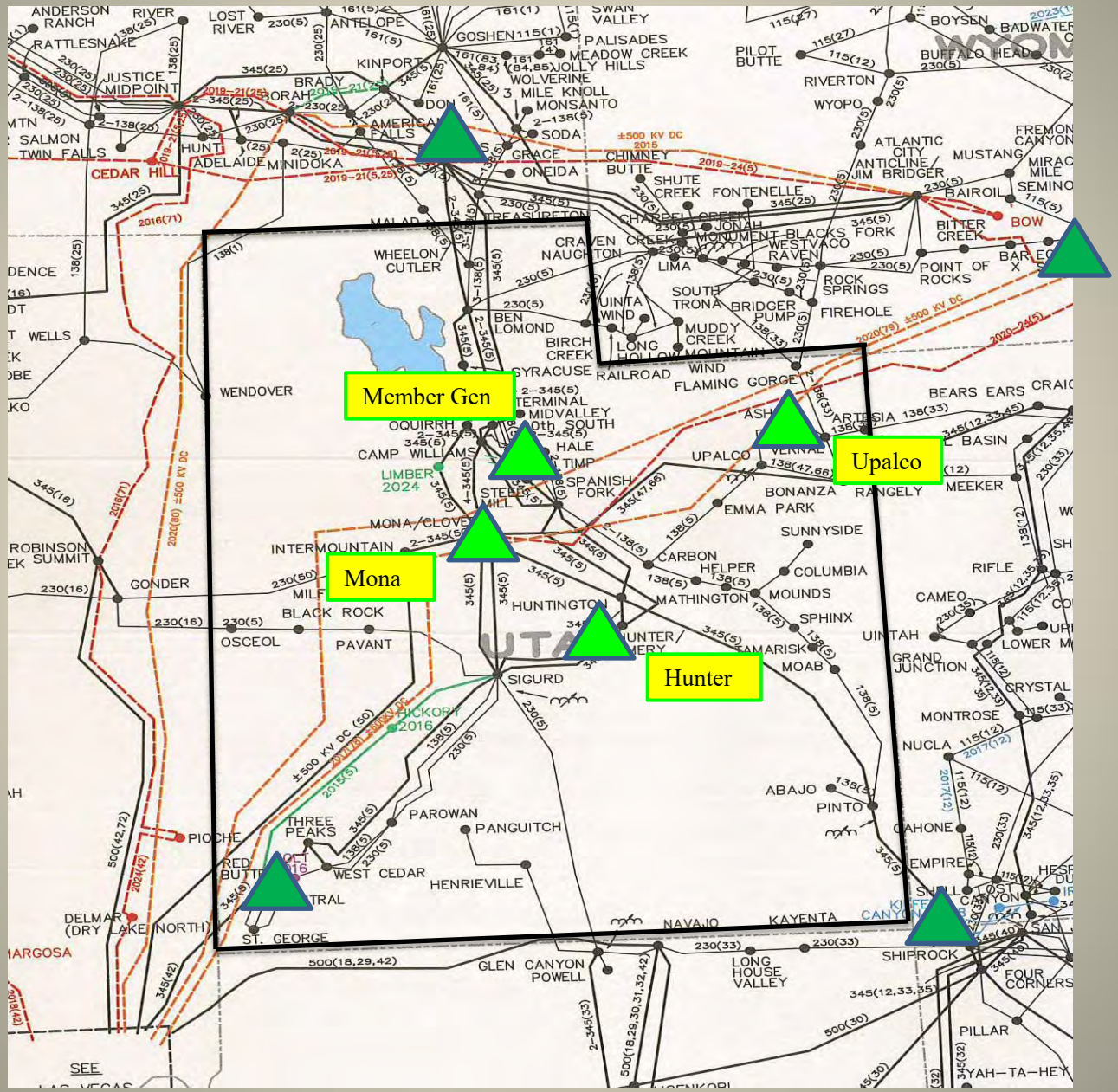
Upalco
Vernal

UMPA's Points of Delivery

UMPA Members

Mona
Hunter

PacifiCorp's Points of Receipt



Western's All Federal Transmission System

Points of Interconnection
(POI)

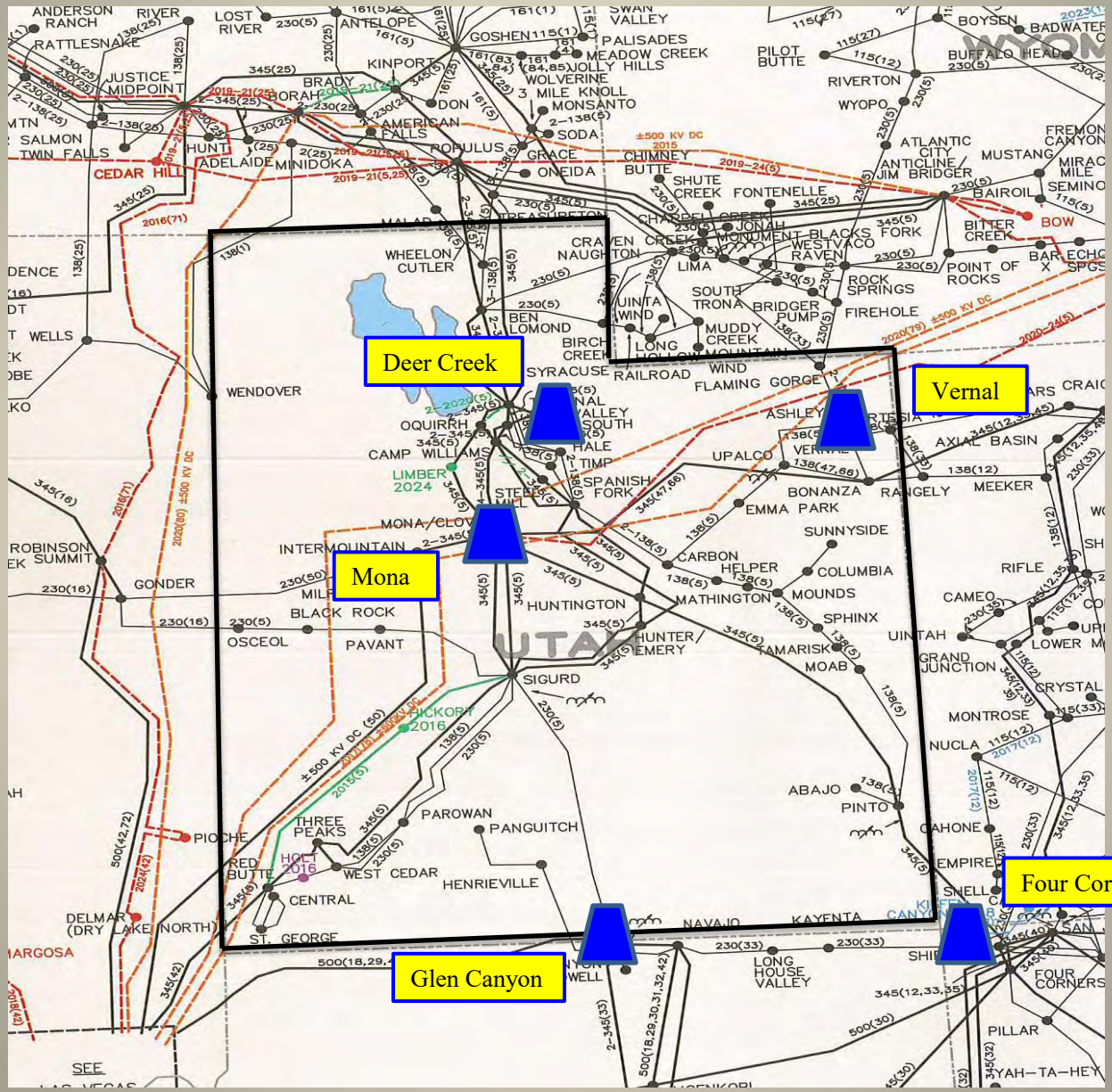
Glen Canyon
Vernal
Deer Creek
Mona
Four Corners

Equivalent Federal Points of Delivery
(EFPOD)

UMPA Members

(Total of 8 POI)

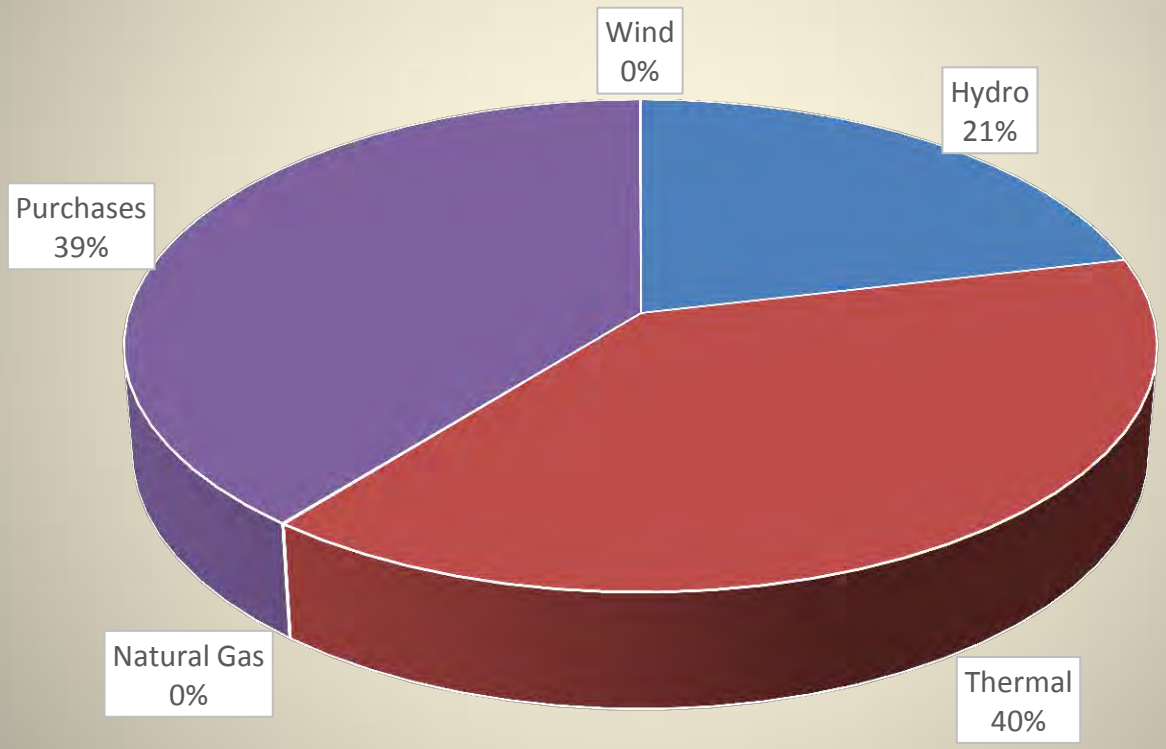
Western's Points of Interconnections



UMPA's
Resources & Transmissions

Questions?

Fuel Resource Mix
FY 2016



Donald E. Gruenemeyer, P.E.
Professional Biography

Don Gruenemeyer is an engineering consultant and President of Sawvel and Associates, Inc., located in Findlay, Ohio. Mr. Gruenemeyer is a registered Professional Engineer with over 37 years of experience in utility planning, management and operations.

Sawvel assists it's clients in power supply planning, transmission and distribution system planning, integrated resource planning, load forecasting, contract negotiations, economic analyses, cost of service and rate design, marketing and load management and studies in support of project financing.

His activities have included assisting clients in the transition to the PJM RTO, Midwest Independent System Operator and Southwest Power Pool capacity and energy markets. He has assisted in many generation capacity planning studies for clients in Arkansas, Indiana, Kansas, Missouri, Michigan, Ohio, Utah and Wisconsin. He is currently assisting several clients in evaluating power purchase arrangements, customer-owned Distributed Energy Resources, avoided cost rates and distribution system planning.

Mr. Gruenemeyer has participated in several regulatory proceedings on behalf of municipal clients before the FERC, the Public Utility Commission of Ohio, the Kansas Corporation Commission and the Michigan Public Service Commission. These proceedings involved wholesale rates, customer choice, unbundled retail rates and power supply cost evaluations.

Mr. Gruenemeyer completed his bachelor's degree in electrical engineering at the University of Nebraska. He is a member of the American Public Power Association, the IEEE Power Engineering Society and is a Registered Professional Engineer in Missouri.

Distributed Generation

Utah Municipal Power Agency

Annual Meeting

Presented By

Sawvel and Associates, Inc.

April 21, 2017

Sawvel
AND ASSOCIATES, INC.
Consultants and Engineers

Introduction

- Don Gruenemeyer, P.E.
- Aaron Teders

Sawvel & Associates Inc.

- Founded in 1951
- Assisted UMPA Since 1982
- Consulting & Engineering Services for Power Supply Planning, Financial Forecasting, Rate Analysis and Cost of Service Studies
- Offices Located in Kansas and Ohio

What Is Distributed Generation (DG)

- Small Scale Power Generation Installed Near Point of Consumption
  - Roof or Ground Mounted Solar Array
  - Wind Turbine
  - Microturbine
  - Biomass
  - Combined Heat and Power (CHP)
  - Reciprocating Internal Combustion Engine

How Does DG Affect UMPA

- Lowers Energy Requirement (MWh)
- May Lower Peak Demand (MW)
- Can Avoid Certain Power Supply Costs
  - Future Generating Capacity
  - Transmission
  - Energy
- Type of DG Affects Level of Avoided Costs

Electric Grid 101

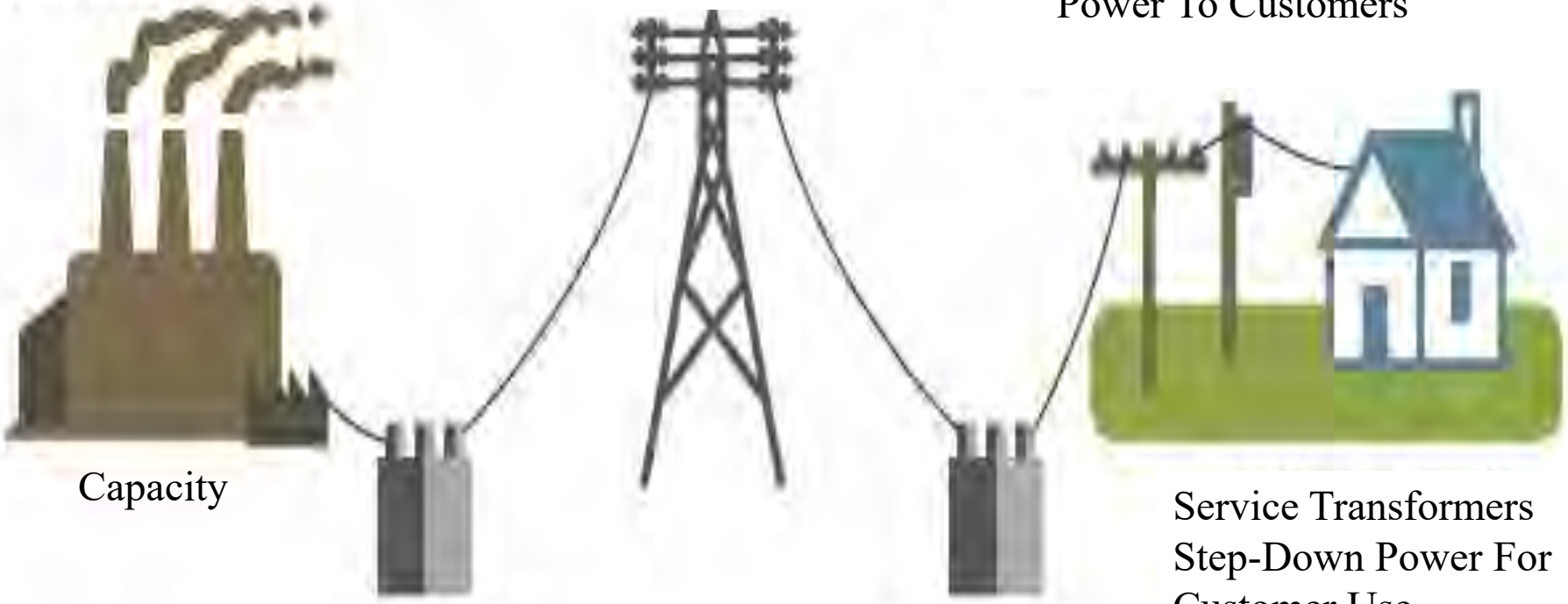
- Power Supply Includes
  - Capacity – Ensures Adequate Generation Available
  - Transmission – Lines Connecting Generators to UMPA Members
  - Energy – kWh Consumed by Customers
- Power From Generators to Customer Requires the Above and:
  - Distribution – Lines Connecting to Customers

Capacity, Transmission And Distribution

Power Plant

Transmission Lines Carry Power Over Long Distances

Distribution Lines Carry Power To Customers



Capacity

Transmission Substation

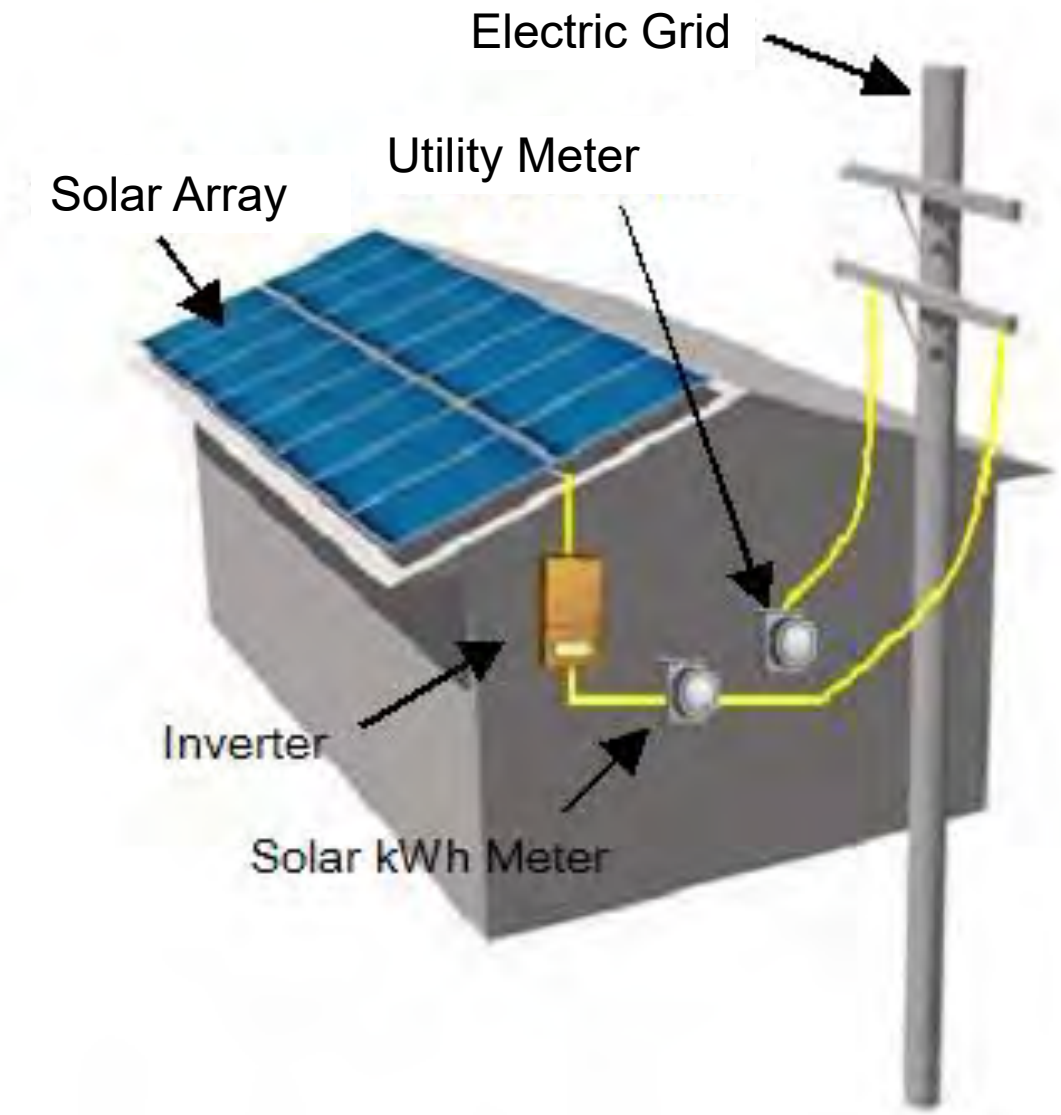
Distribution Substation

Service Transformers Step-Down Power For Customer Use

UMPA Approach To Solar DG

- Buy All – Sell All Approach
  - Feed In Tariff
  - > 25 kW_{AC} Solar Facility
- Customer Billed at the Retail Rate
- UMPA Purchases Output at Avoided Cost
- DG Customer Credited the Avoided Cost

Buy All – Sell All Approach



Avoidable Costs

- Capacity
  - At the Time of UMPA Annual Peak Demand
- Transmission Service
  - At the Time of PacifiCorp Monthly Peak Demand
- Energy
  - On Peak - 6 a.m. to 10 p.m. MPT
  - Off Peak – All Other Hours
- Transmission and Distribution Line Losses

Unavoidable Costs

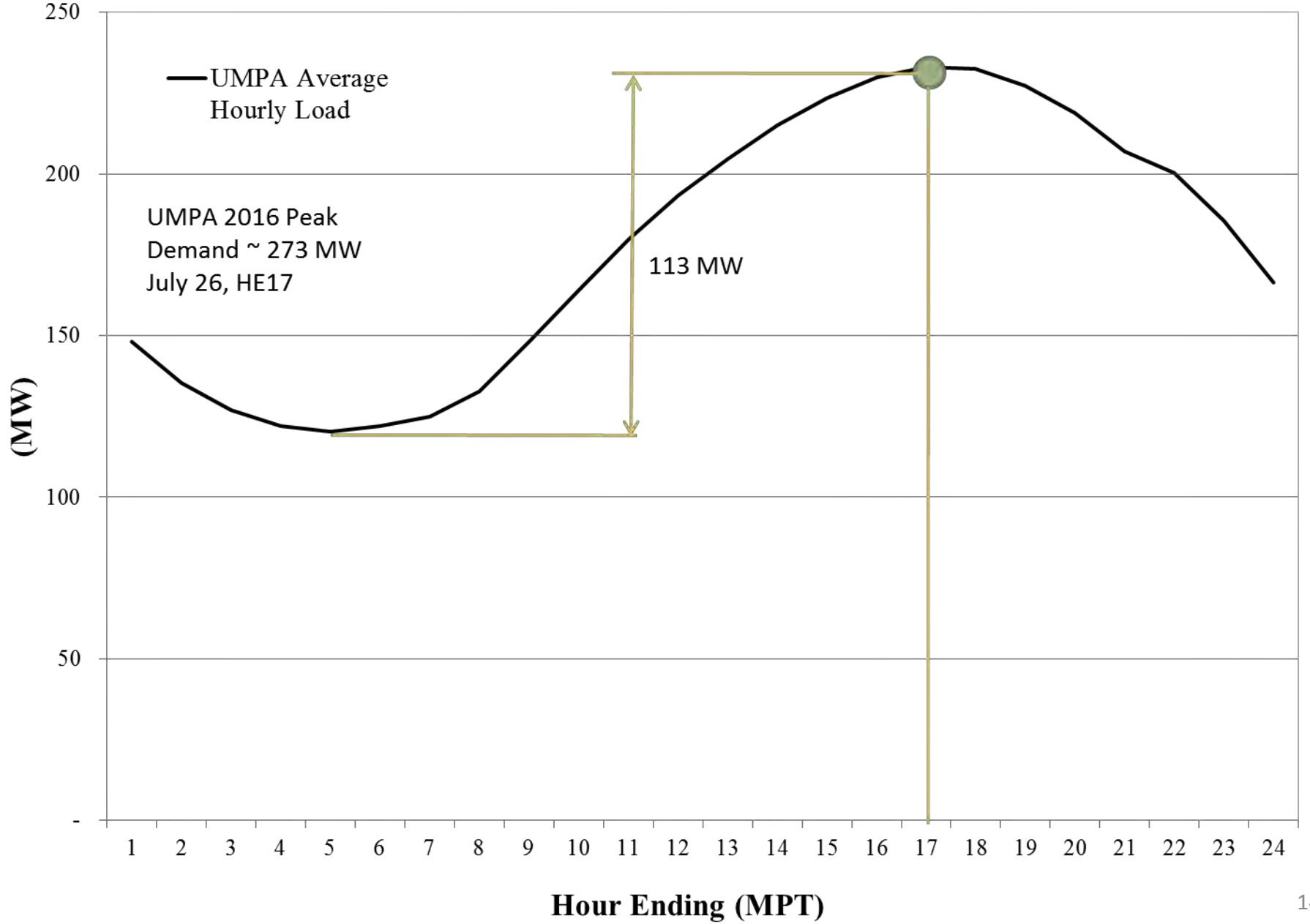
- Distribution System O&M
  - Labor
  - System and Facility Maintenance
  - Contract And Professional Services
- Existing Debt Service – Money Borrowed to Fund:
  - Generators
  - Transmission and Distribution Lines
- Capital Improvements
- General, Administrative and Billing

Determining Solar Avoided Cost

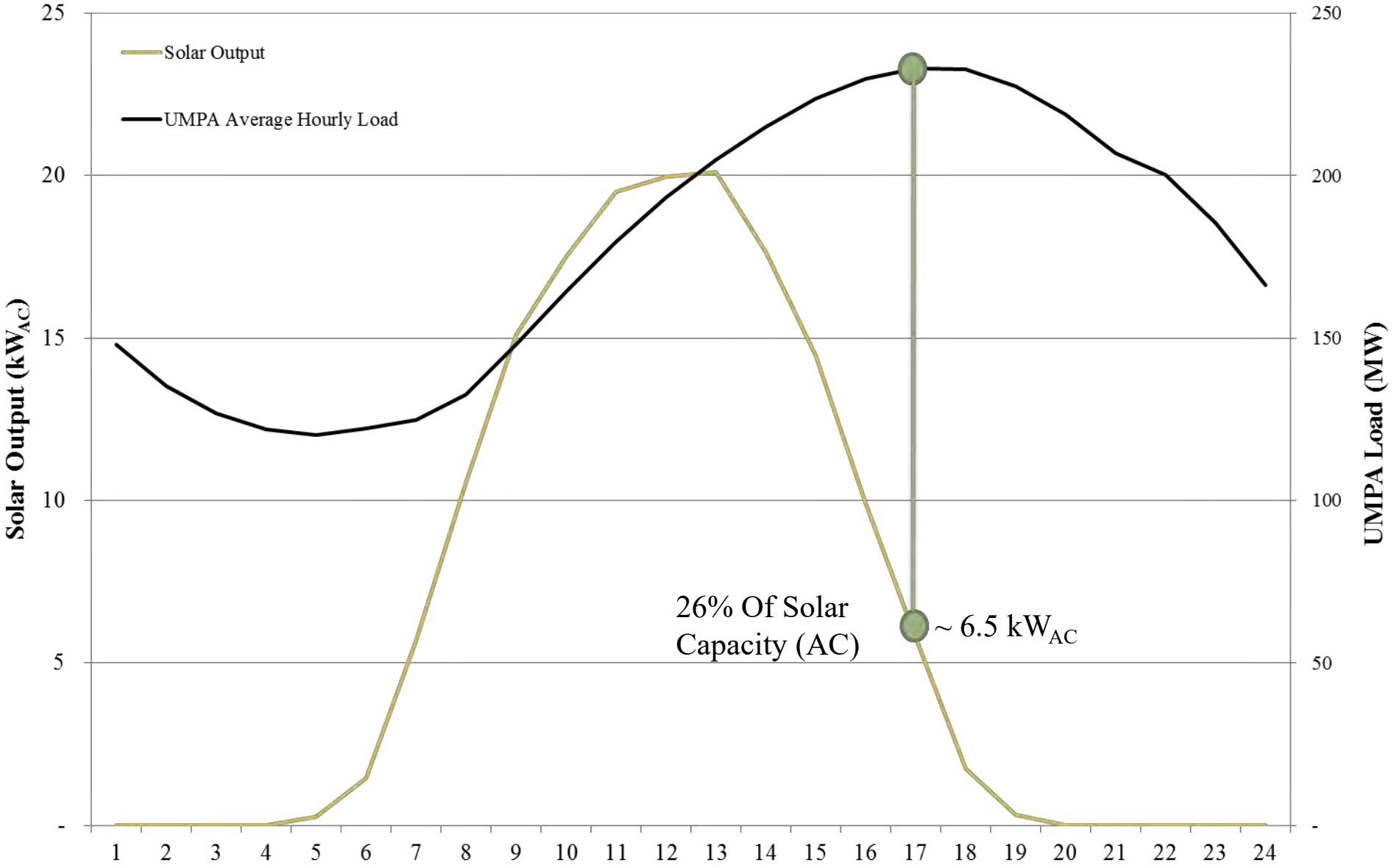
Avoided Capacity

- Estimate Solar Output During Peak Demand
  - Hottest Days of Year
  - July 26, 2016 6 p.m. MDT
  - Coincident Factor Of Approximately 26%
- UMPA Capacity Needed Beginning CY2020
- Avoids Future Capacity Resource Purchase

July 2016 UMPA Average Hourly Load



July Average Solar Output and UMPA Load

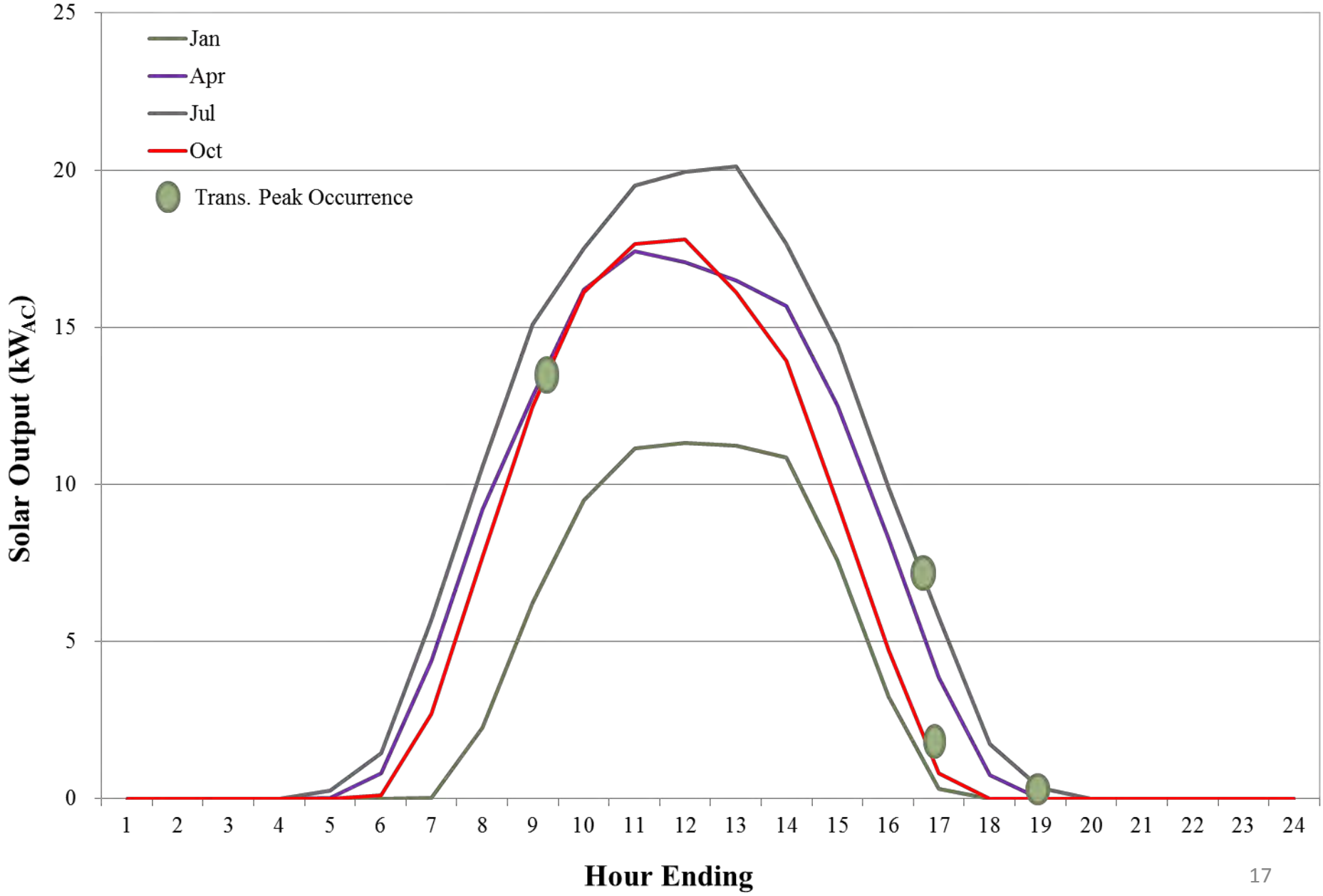


25kW$_{AC}$ Single Axis Solar Array ~NREL PV Watts Calculator. DC to AC ratio of 1.2. 1.5% AC losses.

Avoided Transmission

- Estimate Solar Output During Trans. Peak
  - Winter ~ 9 a.m. or 7 p.m. MDT
  - Summer ~ 6 p.m. to 7 p.m. MDT
  - Average Coincident Factor Of 15.7%
- Avoids PacifiCorp Monthly Trans. Charges

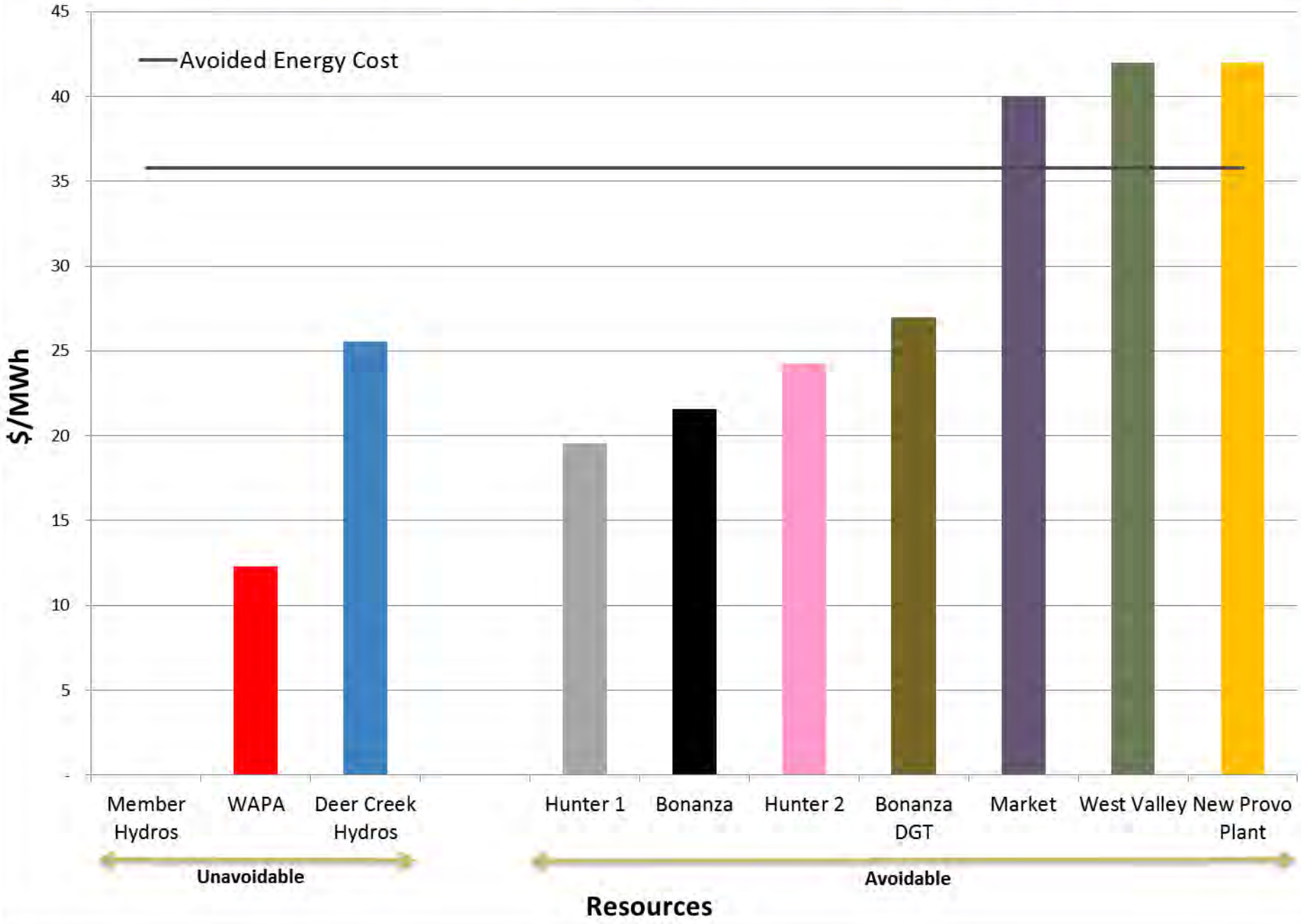
Average Solar Output During Trans. Peaks



Avoided Energy

- Estimate Solar Energy Output
  - On Peak Hours
- UMPA Avoids Energy Cost Associated With
  - Existing Resources
  - Future Resources
- Credit For Trans. And Distribution Losses

P.S. Resource Dispatch Cost In 2020



Solar DG Avoided Cost Summary

- UMPA Purchases Output From DG Customer
  - >25 kW_{AC} Solar Facility
  - Solar Output Metered
- DG Customer Billed Retail Rate
  - Existing Utility Meter
- DG Customer Credited Avoided Cost
  - Potential for Renewable Energy Credit
- UMPA Does Not Avoid Existing Capacity Costs

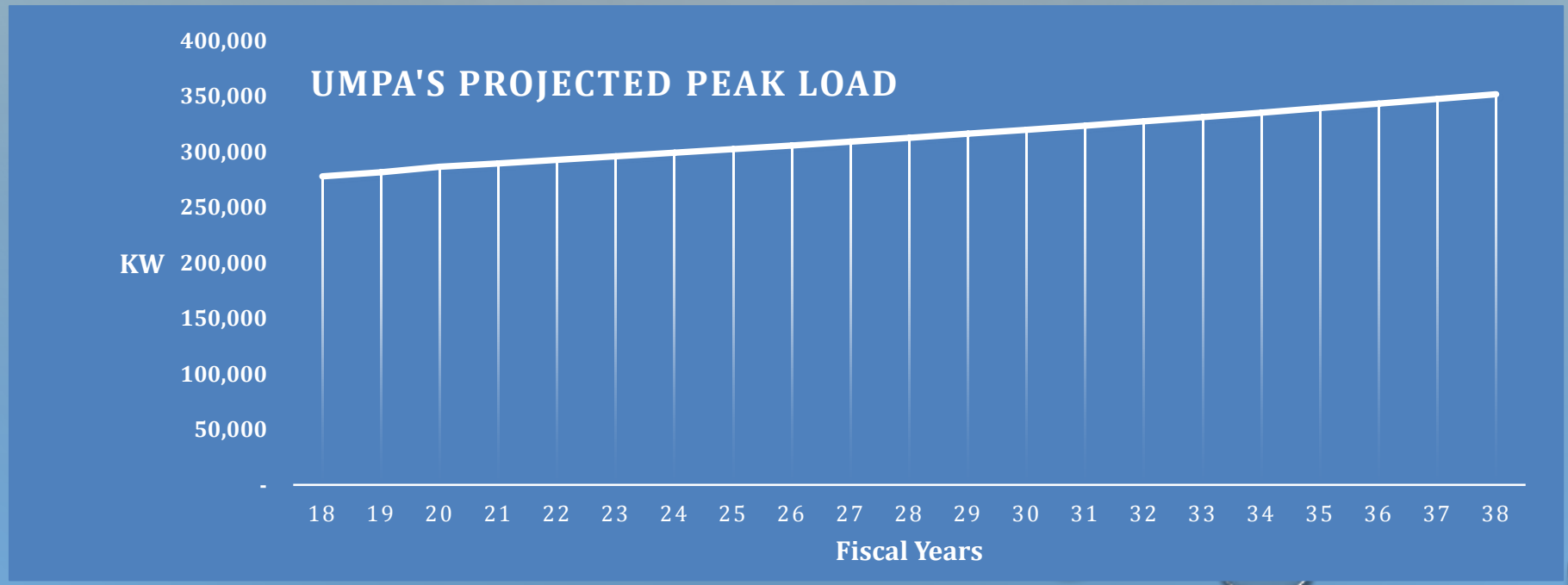
UMPA'S FUTURE POWER SUPPLY WHAT'S NEXT?

PREPARED BY: KEVIN GARLICK

APRIL 21, 2017

WHAT ARE UMPA'S NEEDS?
LOAD FORECAST

LOAD GROWTH TABLE					
		FY18	FY19	FY20-FY27	FY28-FY37
LEVAN	Capacity	100.2%	100.5%	100.5%	100.5%
MANTI	Capacity	100.8%	100.9%	101.0%	101.0%
NEPHI	Capacity	101.3%	101.6%	101.8%	101.8%
PROVO	Capacity	100.27%	100.4%	100.4%	100.4%
SALEM	Capacity	101.5%	101.8%	101.9%	101.9%
SP. FORK	Capacity	102.3%	102.5%	102.7%	102.7%



WHAT ARE UMPA'S EXISTING POWER RESOURCES?

- COLORADO RIVER STORAGE PROJECT (FEDERAL POWER) CONTRACT – HYDRO (RENEWABLE)
- HUNTER UNIT 1 OWNERSHIP – COAL FIRED
- BONANZA OWNERSHIP – COAL FIRED
- PACIFICORP CONTRACT – MIX RESOURCE
- DESERET CONTRACT – BONANZA AND HUNTER UNIT 2 – COAL FIRED
- MEMBER-OWNED HYDROELECTRIC POWER PLANTS – 6 UNITS (RENEWABLE)
- WINDWARD CONTRACT – WIND (RENEWABLE)
- WEST VALLEY POWER PLANT – NATURAL GAS

WHAT IS PLANNED?
UPCOMING POWER SUPPLIES

- SIX-MILE HYDROELECTRIC PROJECT CONTRACT – HYDRO (RENEWABLE)
- PROVO POWER PLANT OWNERSHIP - NATURAL GAS
- BYU COGENERATION CONTRACT – NATURAL GAS (RENEWABLE)
- OLMSTED HYDROELECTRIC PROJECT (FEDERAL POWER) CONTRACT – HYDRO (RENEWABLE)
- SOLAR – DISTRIBUTIVE GENERATION (RENEWABLE)
  - ROOF TOP SOLAR – RESIDENTIAL
  - COMMERCIAL PROJECTS OVER 25 KW – FEED-IN TARIFF
  - SUBSCRIBER SOLAR PROGRAM (COMMUNITY SOLAR)

SIX-MILE HYDRO POWER PLANT

- SMALL HYDRO – 1.3 MW & 4,439 MWH/YR AVERAGE
- RATE – $37/MWH WITH 2% ESCALATION/YR
- 3 YEAR CONTRACT (OPTION TO RENEW)
- START: MAY 2017

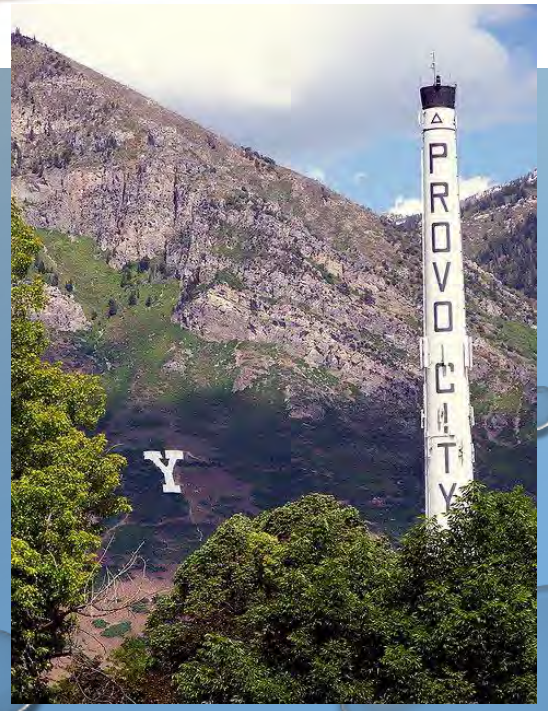
PROVO POWER PLANT

- PURPOSE FOR THIS FACILITY
  - PEAKING POWER
  - STAND-BY RESERVES
  - LOWER TRANSMISSION COSTS

    (MONTHLY PEAK TRANSMISSION COSTS ARE HIGHER THAN A FEW HOURS OF GENERATION)
  - REMOTE OPERATION
  - MINIMUM MAINTENANCE STAFF
  - CLEANEST ENGINE FACILITY IN THE STATE

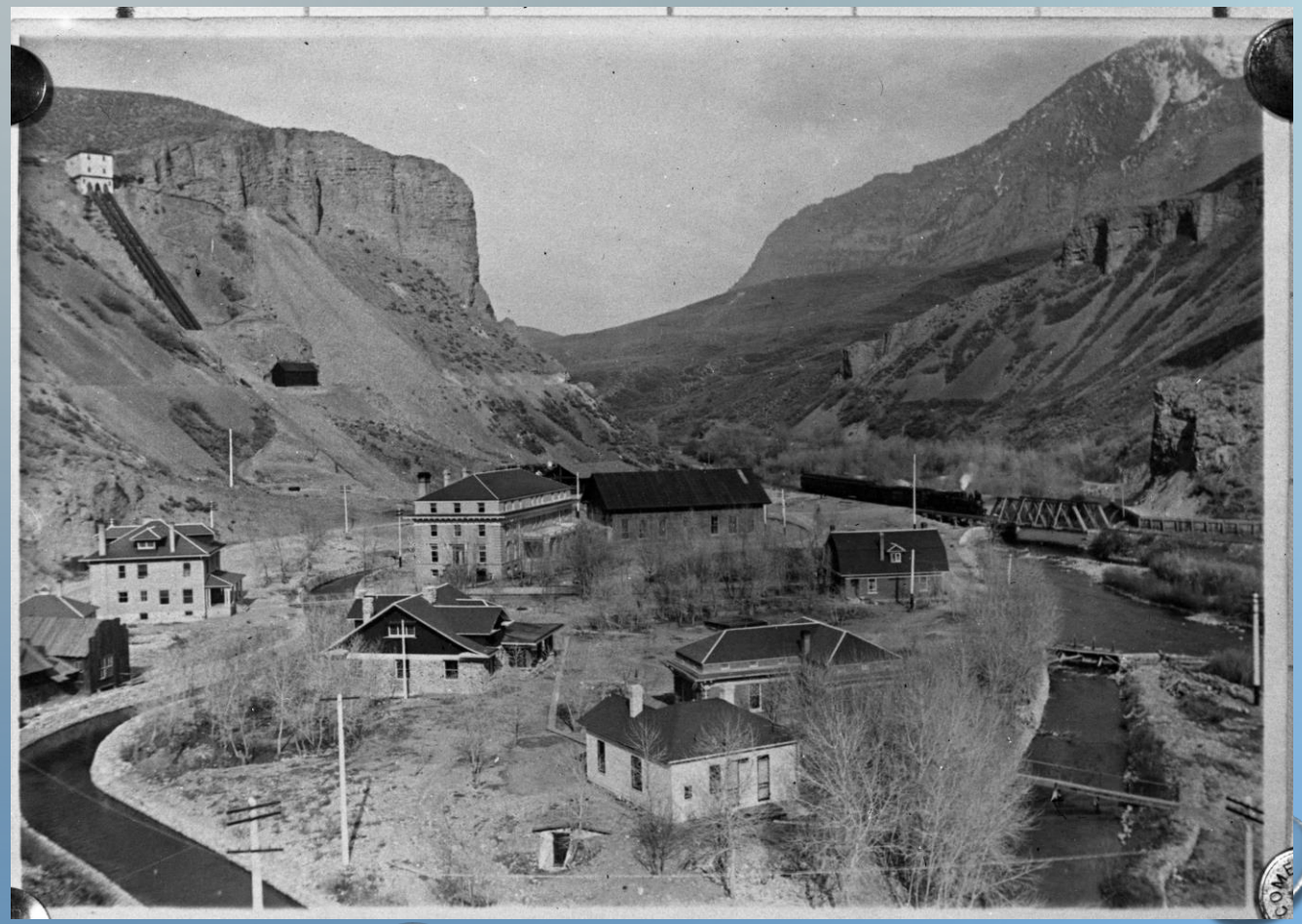
BYU COGENERATION PLANT

- COMBINED HEAT AND POWER FACILITY
  - RENEWABLE
- NEGOTIATING THE DEAL
  - BYU - GETS THE HEAT
  - UMPA - BUYS THE POWER
  - PROVO - SELLS RETAIL ELECTRIC SERVICES TO BYU
- INTERCONNECTION AGREEMENT
  - ENGINEERING STUDY (SALIENT ENGINEERING)
- POWER PURCHASE AGREEMENT
  - RATE STUDY (SAWVEL & ASSOCIATES)



OLMSTED HYDROELECTRIC POWER PLANT

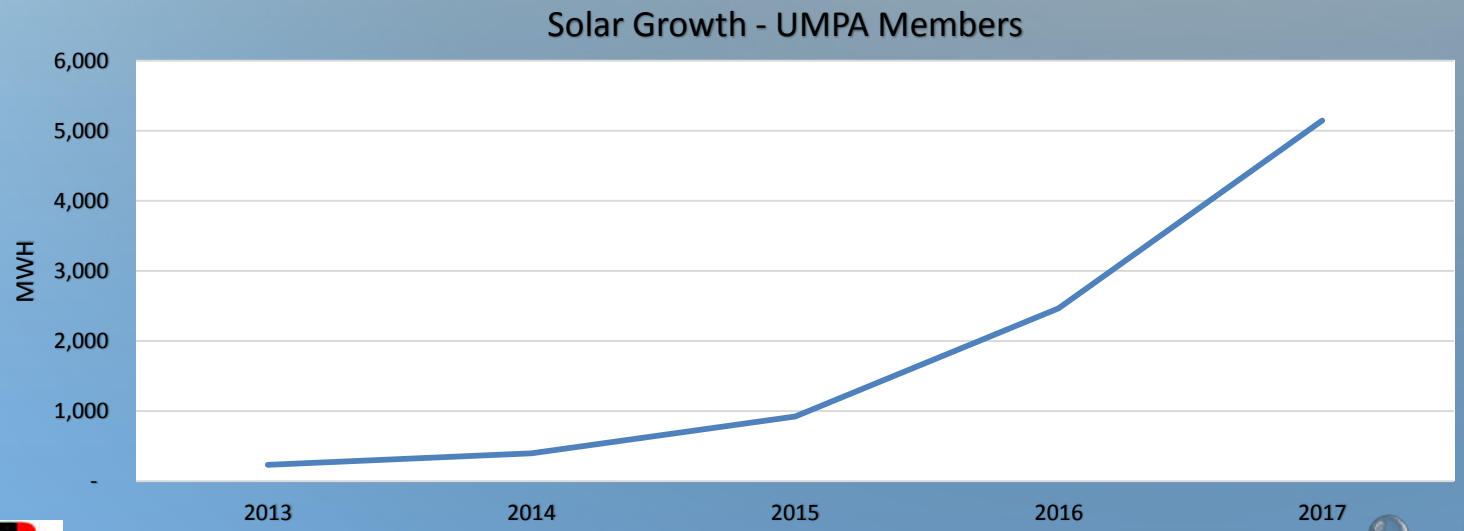
- HISTORICAL HYDRO SITE – 1900
- EARLY OWNER – UTAH POWER & LIGHT
- REBUILDING THE POWER PLANT
  - CENTRAL UTAH WATER CONSERVANCY DISTRICT
  - DEPT. OF INTERIOR
- MARKETING THE FEDERAL POWER
  - WESTERN AREA POWER ADMINISTRATION
- MARKETING PLAN
  - 13 MW & 25,000 MWH/YEARLY
  - INTERCONNECTION TO PROVO POWER
  - UMPA REQUESTING AN ALLOCATION
  - PRICING SIMILAR TO DEER CREEK - $25-$35/MWH



NET METERING – ROOF TOP

UMPA-MEMBER CITIES ENCOURAGE SOLAR THROUGH NET METERING PROGRAMS

Fiscal Year		Levan	Manti	Nephi	Provo	Salem	Spanish Fork	UMPA
As of Feb 17	Customers	0	4	6	321	21	98	450
	Installed Capacity (kW)		38.00	48.86	1,971.14	150.57	583.13	2,791.70
	Estimate Production (kWh)		53,261	68,482	2,762,754	211,039	817,315	3,912,851
	System Energy	4,994,456	21,296,679	99,884,683	800,443,152	36,969,752	261,619,024	1,225,207,746
	Percentage of System		0.25%	0.07%	0.35%	0.57%	0.31%	0.32%



SOLAR – MORE PLEASE!

COMMERCIAL – 25 KW + FEED-IN TARIFF

- BUY ALL/ SELL ALL PROGRAM
  - UMPA BUYS ALL AT AVOIDED COST RATE
  - MEMBER CITY SELLS ALL AT RETAIL RATES
  - CUSTOMER NETS THE BENEFIT
- NEW TOOL IN THE TOOL BOX
- EACH MEMBER CITY TO APPROVE

SUBSCRIBER SOLAR PROGRAM OR COMMUNITY SOLAR

- MEMBER CITY TO OPT INTO PROGRAM
- MARKETING TO CUSTOMERS
- ALTERNATIVE TO ROOFTOP SOLAR
- FIXED POWER COSTS PLUS WHEELING
- NEW RATE FOR UTILITY BILLING
- ANOTHER TOOL IN THE BOX
- FINDING THE RIGHT SITE

FUTURE RESOURCE GAP
THE NEXT TARGET

FY - 2020

- DESERET CONTRACT EXPIRES
  - 80 MW
  - DECEMBER 2019
  - BASE LOAD RESOURCE
  - COAL FIRED

FY - 2025

- BONANZA OWNERSHIP–LIKE EXPIRES
  - 3.12 % OF THE PLANT OR 14 MW
  - MARCH 2025
  - BASE LOAD RESOURCE
  - COAL FIRED

OPTIONS TO FILL THE FUTURE GAP

- EXTEND DESERET POWER PURCHASE AGREEMENT - COAL FIRED
- BUY NUCLEAR POWER – CARBON FREE
  - UAMPS' SMALL MODULAR REACTORS PLANT IN IDAHO – IDAHO NATIONAL LAB SITE – 2026?
  - BLUE CASTLE SITE – WESTINGHOUSE AP1000 DESIGN – GREEN RIVER SITE – 2028?
- COMBINE CYCLE NATURAL GAS POWER PLANT – 2021? (NDA WITH DEVELOPER)
- MARKET PRICED 5-YEAR POWER PURCHASE AGREEMENT – SOURCE NOT DEFINED
- UTILITY SOLAR FARM DEVELOPMENT
- NEW TECHNOLOGY
- NEW OPPORTUNITIES

UTILITY SOLAR OPTIONS

- EXAMINING MULTIPLE DEVELOPERS – NDA
- MEETS STATE'S GOAL FOR RENEWABLE
- COMPETITIVE PRICES - $35 TO $50/MWH (NO TRANSMISSION COSTS)
- TRANSMISSION CHALLENGES
- TIMING – REDUCTION OF TAX INCENTIVES
- DUCK CURVE IMPACTS – SUPPLEMENTAL CAPACITY
- DECISION FOR 2020 BY THIS FALL

20% BY 2025 - UTAH RENEWABLE GOAL
ESTIMATED 270,000 MWH FOR UMPA

COAL REDUCTION

- 2017 PACIFICORP CONTRACT -75 MW
- 2020 DESERET CONTRACT – 80 MW
- 2025 BONANZA OWNERSHIP-LIKE – 16 MW
- 2030 BONANZA OWNERSHIP – 17 MW
- 2042 HUNTER UNIT 1 – 27 MW

EXISTING RENEWABLES: 28.7% 2016

- CRSP – FEDERAL POWER
- DEER CREEK DAM – FEDERAL POWER
- MEMBER HYDRO POWER PLANTS
- WINDWARD CONTRACT - WIND

RENEWABLE GROWTH

- NET METERING
- FEED-IN TARIFF
- COMMUNITY SOLAR
- 6-MILE HYDROELECTRIC PLANT
- BYU COGENERATION PLANT
- OLMSTED HYDROELECTRIC PLANT
- **UTILITY GRADE SOLAR**

Prediction

UMPA will be over 40% renewable by 2025

WHAT SHOULD UMPA DO WITH POWER SUPPLY?

- UPDATING UMPA'S INTEGRATED RESOURCE PLAN (IRP) – FEDERAL POWER REQUIREMENT
- EXAMINATION OF MANY VARIABLES
  - COSTS/RATES/FINANCING
  - RESOURCE TYPE – BASE, INTERMEDIATE AND PEAKING
  - RENEWABLE GOALS
  - LOCAL, STATE & FEDERAL DIRECTION - ENVIRONMENTAL AND REGULATORY POLICIES
  - GRID STABILITY & CUSTOMER RELIABILITY
  - ENERGY EFFICIENCY, NEW TECHNOLOGY & DISTRIBUTED GENERATION
- 5 TO 20 YEAR LOOK INTO THE FUTURE OF POWER SUPPLY
- FEEDBACK FROM OUR MEMBER CITIES
- PUBLIC PROCESS – REVIEW AND COMMENT PERIOD
- ADOPTED BY THE UMPA BOARD

QUESTIONS?

THANK YOU

Glossary of Electrical Terms

Adequacy	The ability of a bulk electric system to supply the aggregate electrical demand and energy requirements of the customers at all time, taking into account scheduled and reasonably expected unscheduled outages of system components.
Area Control Error	The instantaneous difference between actual and scheduled interchange, taking into account the effects of frequency bias (and time error) or unilateral inadvertent, if automatic correction for either is part of the system's Automatic Generator Control.
Banking	Energy delivered or received by a utility with the intent that it will be returned in kind in the future. (See Storage, Energy Exchange)
Cap & Trade	The Cap portion of this phrase means an industry, area or nation is allowed a not to exceed quantity of pollution credits or allowances. The Trade portion of this phrase is concerning a portion of the allowances that are not used. It becomes a commodity that can be sold or traded to others.
Capacity	The maximum load that can be generated, transmitted or consumed.
Capacity Factor	The ratio of actual output of a power plant over a period of time and its potential output if it had operated at full the entire time.
Co-generation	Utilization of one heat source for two purposes: process steam and electrical generation.
Contingency	The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker switch or other electrical element.
Demand	The maximum usage of electricity at a given instant. Demand is often measured in 15-minute increments and usually expressed in kilowatts. The primary source of "demand" is the power-consuming equipment of the customers.
Demand Charge	The specified charge to be billed on the basis of peak demand under an applicable rate schedule or contract.
Distribution	The locally-owned power system used to deliver electric energy to retail customers. Distribution facilities are low-voltage.
Distributed	Many small generation sources located in areas where fuel is

Generation	available and little or no transmission is required to get the electrical energy to the consumer.
Diversity	The benefit enjoyed by two or more electric loads when their maximum demand occurs at different times.
Energy	The ability to do work over time. In the electric utility industry, energy is measured by kilowatt hours or megawatt hours.
Energy Imbalance Market	An automated sub-hourly economic optimization to balance loads and resources by dispatching resources voluntarily bid into the system in order to mitigate imbalance pricing caused by intermittent resources.
Firm Power	An un-interruptible power supply to be delivered under terms of a contract.
Gigawatt(GW)	One billion watts, or one million kilowatts, or one thousand megawatts. Enough to light ten million 100-watt light bulbs.
Gigawatt Hour	Electric energy equal to one gigawatt of power supplied steadily for one hour, i.e. the amount of electricity needed to light ten million 100-watt light bulbs for one hour.
Grid	A system of high-voltage transmission and power-generating facilities that are interconnected with a number of bulk power supply sources.
Hydro	A term used to identify a type of generating station unit in which water power is used to turn a turbine.
Intermittent Resource	Any resources that is not continuously available due to some factor outside direct control.
Independent System Operator	An independent, federally regulated entity established to coordinate regional transmission in a non-discriminatory manner and ensure the safety and reliability of the electric system.
Kilowatt (kW)	One thousand watts. One kilowatt is needed to light ten 100-watt light bulbs.
Kilowatt Hour	The basic unit of electric energy equal to one kilowatt of power supplied steadily for one hour. One kilowatt hour is needed to light ten 100-watt light bulbs for one hour.

Kilowatt/Month A measurement carrying the same definition as kilowatt hour except as to the duration of time. Alternatively, this term may be used to express a function of billing, i.e., a charge per month for each unit of

electric power either reserved by the customer or measured on the customer's Demand meter.

Largest Hazard A term used among power pool members that identifies their largest non-firm resource.

Line Loss Electric energy lost in the process of transferring it over distribution and transmission lines.

Load The amount of electric power required at any specified point or points on a system. Load originates primarily at the power consuming equipment of the customers.

Load Curve A curve on a chart showing power (kilowatts) supplied, plotted against time of occurrence. A load curve illustrates the varying magnitude of the load during the time period covered.

Load Factor A measurement showing how efficiently capacity is being utilized within a system. The higher the load factor, the better the efficiency. Load factor is the ratio of the average load in kilowatts supplied during a designated period to the peak load in kilowatts occurring in that period. Load factor is calculated by multiplying the kilowatt hours in the period by 100 and dividing by the product of the maximum demand in kilowatts and the number of hours in the period.

Load Pattern The historical usage of electricity by a utility.

Megawatt One million watts or one thousand kilowatts. The amount of power needed to light ten thousand 100-watt light bulbs.

Megawatt Hour The unit of energy equal to one thousand kilowatts supplied steadily for one hour, or the amount of power needed to light ten thousand 100-watt light bulbs for one hour.

Mercury Hg 80 Mercury occurs in deposits throughout the world mostly as cinnabar (mercuric sulfide) which is the source of the red pigment vermilion, and is mostly obtained by reduction from cinnabar. Cinnabar is highly toxic by ingestion or inhalation of the dust. Mercury poisoning can also result from exposure to soluble forms of mercury (such as mercuric chloride or methylmercury), inhalation of mercury vapor or eating fish contaminated with mercury. This is a regulated toxic substance released from fossil fuel when combusted.

Micron Size Referring to a particle size of air pollutant one millionth of a meter. Air quality standards refer to 10 micron and 2.5 micron sized particles suspended in air.

Net Metering Electric energy metering that is capable of measuring incoming energy and outgoing energy and resulting in the net measurement.

Nitrogen Oxides NOX, Nitrogen Oxides form when fuels are burned at high temperatures.

Non-firm A power supply that may be interrupted. Because it is non-firm, it is usually cheaper.

Peak The greatest load on an electric system during any prescribed demand interval.

PM 10, PM 2.5 Particles of air pollutant measuring 10 millionth of a meter and 2.5 millionth of a meter.

Power Factor The ratio of real power (kW) to apparent power, kilovolt-amperes (kVa) for any given load and time. Expressed as a percentage, it is a measurement of electricity that can do work versus electricity that cannot do work.

Public Power The term used to describe consumer-owned electric utilities, such as municipal electric utilities, rural electric cooperatives and electric service or public utility districts.

Reserves - Operating That capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection. It consists of spinning and non-spinning reserve.

Reserves - Spinning	Unloaded generation that is synchronized and ready to serve additional demand.
Smart Grid	This phrase refers to many actions of economy taking place in energy storage, usage, transmission and consumption. Monitoring the movement and consumption of all aspects of energy to make better decisions and increase the efficient usage of products.
Smart Metering	Energy metering that provides real time energy consumption information to the customer and the provider so economic management decisions can be made.
Substation	A facility which changes or regulates the voltage of electricity.
Sulfur Dioxide	SOX or SO2 Sulfur Dioxide is released primarily from burning fuels that contains sulfur like coal, oil and diesel fuel.
Title V Operating	Operating permit for the source (UMPA) and Utah (DAQ) to discharge
Permit	to the atmosphere Criteria Air Pollutants. Permit must be renewed every five years**.**
Transformer	An electromagnetic device for changing the voltage of alternating current electricity.
Transmission	The process of transporting electric energy in bulk from a source of supply to other principal parts of the system or to other utilities. Transmission refers to the high-voltage facilities which transport electric energy.
Unscheduled Flow	The difference between the scheduled and actual power flow on a transmission path.
Wheeling	Transmission of power over lines owned by one utility on behalf of another utility.

Glossary of Acronyms

AHP Available Hydro Power. The amount of hydro capacity and energy made available monthly as determined by WAPA

APPA American Public Power Association, located in Washington, D.C. is the membership organization for municipal electric utilities.

CA-ISO California Independent System Operator

CDP Customer Displaced Power. Power Acquired or generated by the WAPA customer on its own behalf to be used as part of the CROD and transmitted over WAPA's system.

CFR Code of Federal Regulations

CREDA Colorado River Energy Distributors Association. An organization comprised of 117 consumer-owned electric utilities in Utah, Colorado, Wyoming, New Mexico and Arizona which purchase power from the Colorado River Storage Project. CREDA is the primary advocate for CRSP purchasers.

CRSP Colorado River Storage Project. A federal water development project authorized by Congress in 1956. Major CRSP power-generating projects include Glen Canyon Dam and Flaming Gorge Dam.

Co-op Rural electric cooperative. Consumer-owned electric utilities whose principal source of financing is the Rural Electrification Administration. Regulation is carried out by a board of directors, elected by the co-op members (customers).

DG&T Desert Generation and Transmission. A cooperative formed by six rural electric cooperatives in 197 to purchase a share of the Hunter II generating plant. Desert also built the 400 megawatt Bonanza generating plant near Vernal, Utah and associated transmission facilities.

DSM Demand Side Management. Methods to reduce the need for additional generating resources by reducing the demand for power.

EIM Energy Imbalance Market

ESD Electric service district, such as Strawberry Electric Service District.

FERC The Federal Energy Regulatory Commission, or FERC, is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines as well as licensing hydropower projects.

IOU Investor-owned utility. An electric utility organized as a stock company whose source of capital is financed by the sale of securities. Utah Power producers who market the output of their power generating facilities to electric utilities or consumers. Utah Power and Light is an "IOU."

IPA Intermountain Power Agency. Organized to finance the 1600 megawatt Intermountain Power Project near Delta, Utah. Participants include 23 Utah municipal electric utilities, six rural electric cooperatives, Utah Power and Light Company and six California municipalities.

IPP Independent power producers.

IRP Integrated Resource Plan. A formal consideration of supply-side and demand-side resources. UMPA is required by law to periodically submit a formal plan to the Western Area Power Administration.

Munis Municipal electric utilities. Regulation is carried out by city council members elected by the municipality's residents.

NERC North American Reliability Council. Comprised of all regional reliability councils throughout the U.S. and Canada. Provides centralized reporting for regional activity.

NPP Northwest Power Pool. A reserve sharing pool comprising 23 utilities in the western United States.

NRECA National Rural Electric Cooperative Association. The membership organization, office in Washington, D.C., representing rural electric cooperatives.

OC Operations Center. The Operations Center schedules power.

PMA Power marketing agency. A division of the U.S. Department of Energy which markets power from federal hydroelectric projects.

PP&L Pacific Power and Light. A division of PacifiCorp.

PURPA Public Utilities Regulatory and Policy Act passed by Congress in 1978. The act enables independent power producers to sell their generating output to utilities and consumers.

RFP Request for Proposals. An early stage of power supply procurement, plant construction, etc.

RICE Reciprocating Internal Combustion Engines. Referring to EPA national emission standards for hazardous air pollutants for existing stationary compression ignition or spark ignition engines at area sources and major sources. This rule was effective May 3, 2010 and the compliance date is May 3, 2013.

Rocky Mtn. Rocky Mountain Power. A division of Pacificorp.

RTO Regional Transmission Organization. A concept whereby a centralized entity would manage transmission systems that would otherwise by managed by their respective owners

SHP Sustainable Hydro Power. A level of long-term operable hydro capacity and energy determined by WAPA projected at an established risk and supplemented by power purchases due to hydrological conditions.

SMP Standard Maintenance Procedures

SOP Standard Operating Procedures

UMPA Utah Municipal Power Agency. A political subdivision of the state of Utah organized under the Interlocal Cooperation Act. Comprised of six Utah municipal electric utilities in Utah, Sanpete and Juab Counties. (Provo, Spanish Fork, Salem, Manti, Levan and Nephi.)

WCD Water Conservancy District. A public agency organized as a political subdivision of the state of Utah, such as Weber Water Conservancy District and Central Utah Water Conservancy District.

WAPA Western Area Power Administration. WAPA, or Western, is part of the U. S. Department of Energy. WAPA operates and maintains federal hydroelectric projects throughout the western United States, including the Colorado River Storage Project.

WECC Western Electricity Coordinating Council. Formerly Western States Coordinating Council (WSCC). The electric reliability council of the western U.S. and British Columbia. Provides and facilitates planning and reliable operation of transmission systems and generation resources.

WRP Western Replacement Power. Energy offered for sale by WAPA, above SHP, in lieu of receiving the entire CROD. This energy is priced according to the market.

ELECTRIC UTILITY RATE MAKING TERMS

I. ADJUSTMENT CLAUSES

Fuel Adjustment Clause:

A clause in a rate schedule that provides for an adjustment of the customer's bill if the cost of fuel at the supplier's generating stations varies from a specified unit cost.

Power Factor Adjustment Clause:

A clause in a rate schedule that provides for an adjustment in the billing if the customer's power factor varies from a specified percentage or range of percentages.

Ratchet Demand Clause:

A clause in a rate schedule that provides that maximum past .or present usage be taken into account to establish billings for a given period.

II. ALLOCATION, DEMAND RELATED COSTS

Average Annual Kilowatt-Hour Use Per Customer:

Annual kilowatt-hour sales of a class of service divided by the average number of customers for the same 12-month period. A customer with two or more meters at the same location because of special services, such as water heating, etc., is counted as one customer, although some utilities count each meter as a separate customer.

Average Number of Customers:

The arithmetic average of customers in the month in each of 12 consecutive months. For those billed other than every month, the number of such customers is adjusted to a 12-month basis (e.g., for bimonthly billing" the number of customers billed, or counted, in each month is multiplied by two and the resultant averaged for the 12-month period).

Average Revenue Per Kilowatt-Hour Sold:

(Average price of electricity) Revenue from the sale of electricity (exclusive of forfeited discounts and penalties) for a particular class of service divided by the corresponding number of kilowatt-hours sold.

Base Load:

The minimum load over a given period of time.

Capacity Factor:

The ratio of the average load on a machine or equipment for the period of time compared to the capacity rating on the machine or equipment.

III. CHARGE

Customer Charge:

An amount to be paid periodically by a customer for electric serv' ice based upon costs incurred for metering, meter reading, billings, etc., exclusive of demand or energy consumption.

Class of Service:

A group of customers with similar characteristics (i.e., residential, commercial, industrial, sales for resale, etc.) which are identified for the purpose of setting a rate for electric service.

Coincident:

The sum of two or more demands which occur in the same demand interval.

Company Use:

Kilowatt-hours used by an electric utility company or the electric department of a utility company in the operation of its business, exclusive of station use and energy lost and unaccounted for.

Cost of Service:

A pricing concept traditionally used as the primary basis for designing electric rate schedules. This concept attempts to maintain correspondence between utility costs and utility revenues for the various classes of usage and customers served.

Cost of Service Study:

A study of the costs incurred by the utility in producing. transmitting, and distributing electricity to its customers, by customer class, in relation to revenues collected from each class or projected to be collected under existing or proposed rates. The costs analyzed may be the actual "embedded" cost of existing plant and expenses, or they may be the marginal cost or incremental cost of the utility's service.

Costing Methodology:

Use of fully allocated cost (historical or projected), incremental cost (short or log run), or some other method to allocate costs among customer classes or jurisdictions.

Customer Class:

A distinction between users of electrical energy. Customer class is usually defined by usage patterns, usage levels, and conditions of service. Classes are usually categorized generically by customer activity (i.e., residential, commercial, industrial, etc).

Customer Cost:

Costs that are related to and vary with the number of customers, such as meters, meter reading, service equipment, and a portion of distribution.

Declining Block Rate:

A pattern of unit charges within a customer class that assesses a lower unit charge on additional purchases (only) as usage increases.

Demand:

The rate at which electric energy is delivered expressed in kilowatts, kilovolt-amperes, or other suitable unit at a given instant or averaged over any designated, but typically short, period of time.

Demand Charge:

That portion of the charge for electric service based upon the electric capacity (KW or KVA) consumed and billed on the basis of billing demand under an applicable rate schedule.

Demand Cost:

Costs that are related to and vary with power demand (i.e., KW), such as fixed production costs, transmission costs, and a portion of distribution costs.

Demand Factor:

The ratio of the maximum demand over a specified time period to the' total connected load on any defined system.

Demand Interval:

The period of time during which the electric energy now is averaged in determining demand, such as 60-minute, 30-minute, 15-minute, or instantaneous.

Demand Rates:

Any method of charge for electric service which is based upon or is a function of the rate of use, or size, of the customer's installation or maximum demand (expressed in kilowatts, kilovolt-amperes, or horsepower) during a given period of time.

Diversity:

That characteristic of variety of electric loads whereby individual maximum demands usually occur at different times. Diversity among customers' loads results in diversity among the loads of distribution transformers, feeders, and substations, as well as between entire systems.

Embedded Cost:

Embedded cost represents monies already spent for investment in plant and in operating expenses.

Energy Charge:

That portion of the charge for electric service based upon the electric energy (KWH) consumed or billed.

Instantaneous Peak:

The maximum demand at the instant of greatest load.

Non-coincident:

The sum of two or more individual demands which do not occur in the same demand interval. Meaningful only when considering demands within a limited period of time, such as a day, week, month, or heating or cooling season, and usually for not more than one year. Also used to indicate the maximum demand of a customer.

Non-coincident Peak:

Demand related costs are allocated among the customer classes in proportion to the customer class maximum demand regardless of the time of occurrence with respect to one another or with respect to the system peak.

Wheeling Charge:

An amount to be paid for Transmission Service (defined herein).

IV. ENERGY

Average:

The total difference in energy input and output or power input and output (due to losses) averaged over a time interval and expressed either in physical quantities or as a percentage of total input.

Energy Accounted For But Not Sold:

This includes kilowatt-hours used by the company in its electric and other departments but not included in "sales", plus that furnished to others without charge.

Energy Loss:

The kilowatt-hours lost in the operation of an electric system.

Fixed Charges:

When used in connection with income statements, this term is usually synonymous with Interest Charges (defined herein). A concept, initiated by the Securities and Exchange Commission, includes in fixed charges one-third of significant rentals. .When used in its broader sense--particularly in cost studies--this term refers to the annual costs attached to the ownership of property such as depreciation, taxes, insurance, cost of money and in some instances rents, general and administrative expenses, and necessary regular maintenance.

Kilovar (KVAR):

1,000 reactive voltamperes.

Kilovolt (kv):

1,000 volts.

Kilovolt-Ampere (kVA):

1,000 voltamperes.

Kilowatt (kW):

1,000 watts.

Kilowatt-Hour (kWh):

The basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit steadily for one hour.

Kilowatt/Month:

A measurement carrying the same definition as kilowatt hour except as to the duration of time. Alternatively, this term may be used to express a function of billing, i.e., a charge per month for each unit of electric power either reserved by the customer or measured on the customer's Demand meter.

Line Loss:

Kilowatt-hours and kilowatts lost in transmission and distribution lines under specified conditions.

Load Curve:

A curve on a chart showing power (kilowatts) supplied, plotted against time of occurrence, and illustrating the varying magnitude of the load during the period covered.

Load Diversity:

The difference between the sum of the highest of two or more individual loads and the coincident maximum load, usually measured in kilowatts.

Load Factor:

The ratio of the average load in kilowatts supplied during a designated period to the peak or maximum load in kilowatts occurring in that period. Load factor, in percent, also may be derived by multiplying the kilowatt-hours in the period by 100 and dividing by the product of the maximum demand in kilowatts and the number of hours in the period.

Loss (Losses):

The general term applied to energy (kilowatt-hours) and power (kilowatt) lost in the operation of an electric system. Losses occur principally as energy transformations from kilowatt-hours to waste heat in electrical conductors and apparatus.

Mega:

Prefix used to denote 1,000,000 units.

Megawatt MW:

1,000 kilowatts, or 1,000,000 watts.

Off-Peak:

Energy supplied during periods of relatively low system demands as specified by the supplier.

On-Peak:

Energy supplied during periods of relatively high system demands as specified by the supplier.

Power Factor:

The ratio of real power (kW) to apparent power (kVA) for any given load and time. Generally, it is expressed as a percentage ratio.

Rate Base:

The value established by a regulatory authority, upon which a utility is permitted to earn a specified rate of return. Generally, this represents the amount of property used and useful in public service and may be based on the following values or combinations thereof. fair value, prudent investment, reproduction cost, or original cost; and may provide for the inclusion of cash working capital, materials and supplies, and deductions for: Accumulated Provision for Depreciation, Contributions in Aid of

Construction, Customer Advances for Construction, and Accumulated Deferred Income Taxes and Accumulated Deferred Investment Tax Credit

Rate Class:

A group of customers identified as a class and subject to a rate different from the rates applicable to other groups.

Rate of Return:

The ratio of Operating Income to a specified rate base, expressed as a percentage.

Rate Structure:

The design and organization of billing charges by customer class to distribute the revenue requirement among customer classes and Rating Periods.

Reactive Power:

The portion of "Apparent Power" that does no work. It is commercially measured in kilovars. Reactive power must be supplied to most types of magnetic equipment, such as motors. It is supplied by generators or by electrostatic equipment, such as capacitors.

System Losses:

The difference between the system net energy (or power) input and output, resulting from energy (or power) lost and unaccounted for between the sources of supply and the metering points of delivery on a system.

Var:

The unit of reactive power. For a two-wire circuit, the product of the voltage times the current times the sine of the angular phase difference by which the voltage leads the current. Vars and watts combine in a quadrature relationship to form voltamperes.

Volt (V):

The unit of electromotive force or electric pressure analogous to water pressure in pounds per square inch. It is the electromotive force which, if steadily applied to a circuit having a resistance of one ohm, will produce a current of one ampere.

Voltage of a Circuit:

The voltage of a circuit in an electric system is the electric pressure of that circuit measured in volts. It is generally a nominal rating based on the maximum normal effective difference of potential between any two conductors of the circuit.

Voltampere (VA):

The basis unit Apparent Power (defined herein under Power). The voltamperes of an electric circuit are the mathematical product of the volts

times amperes of the circuit. The practical unit of Apparent Power is the kilovolt-ampere (kVA), which is 1,000 voltamperes.

Watt:

The electrical unit of power or rate of doing work. The rate of energy transfer equivalent to one ampere flowing under a pressure of one volt at unity power factor. It is analogous to horsepower or foot-pounds per minute of mechanical power. One horsepower is equivalent to approximately 746 watts.

Roger O. Tew is currently the interim Executive Director of the Utah League of Cities and Towns (ULCT) – a role he assumed in January of this year. For over 20 years, he has maintained a successful legal and consulting practice specializing in government affairs and state and local taxation. He has been a long-time lobbyist for a number of municipal organizations.

Prior to entering private practice he spent nearly 20 years in Utah State government where he worked as Director/General Counsel of the Office of Legislative Research and General Counsel (Staff to the Utah Legislature) and nearly 12 years as a member of the Utah State Tax Commission. He is a graduate of Utah State University, with a B.A. in political science and history and an M.A. in economics, and a law degree from Brigham Young University.

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UTAH LEAGUE OF CITIES AND TOWNS

2017 LEGISLATIVE SESSION RECAP

Where we've been, where we are, why we are here, and where we're going

PS: 276 days until the 2018 session officially starts

In 45 (46) days, here's what happened

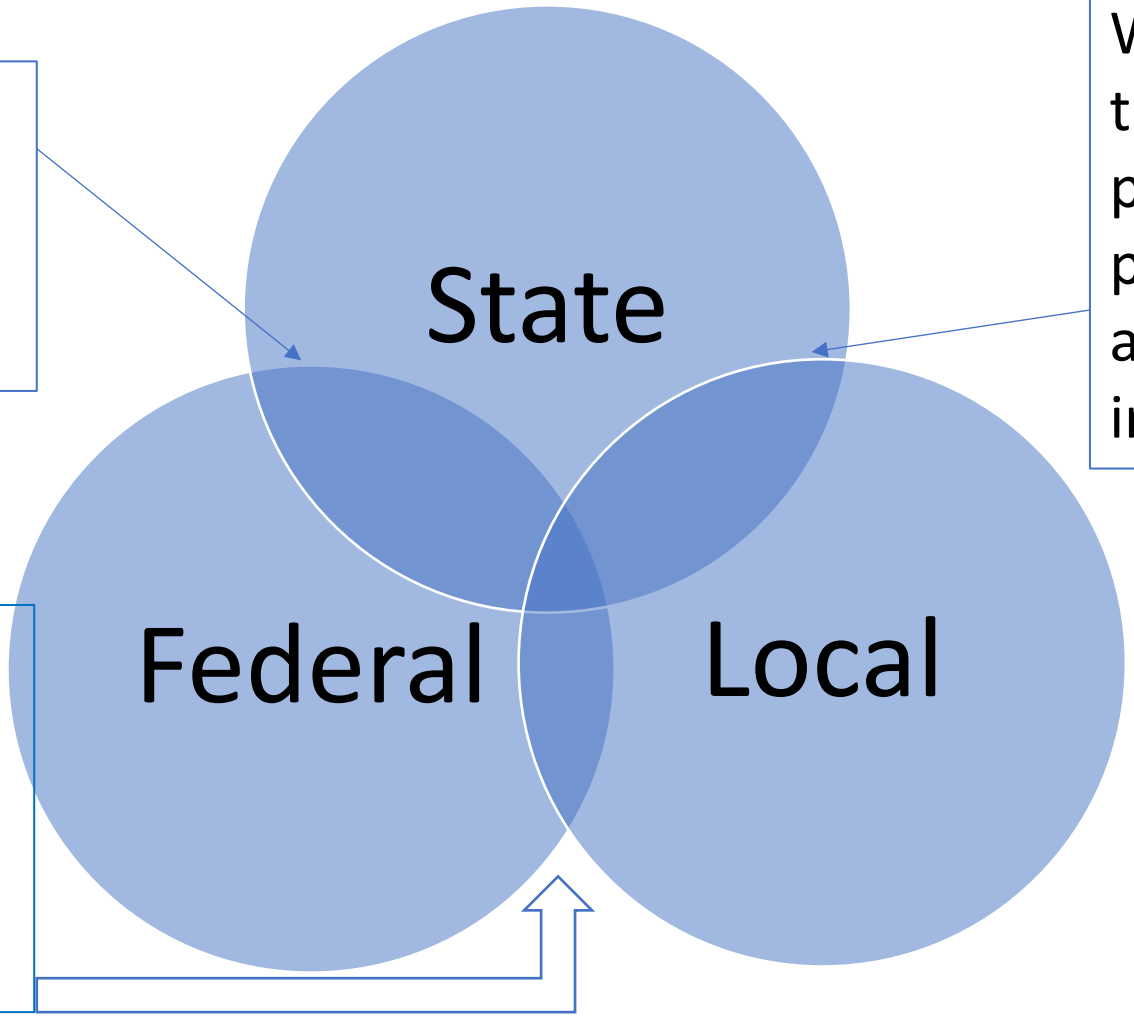
1,272 bill requests: RECORD

815 bills considered & 535 bills passed (66%)

ULCT tracked **283**/815 (35% of all bills; ULCT record)

Where we are: tension from yesterday to tomorrow

Federalism conflicts, dating to pre-1787



What are these pressure points? Why are they increasing?

Federal-local conflicts continue to grow (group homes, water)

What are the cannonballs coming at us?

Structural: cities are political subdivisions of the state

1) One bad city = "need" for state law
2) State policy trumps local practice
3) ***State priority: investment of state $ and resources***

Other pressure points:

1) Local gov't infringes on fundamental rights (i.e. property)
2) What is the "proper role of government?" (libertarian)
3) Desire for uniformity & efficiency in local government
4) Perceived lack of justification for local gov't fees
5) Disruptive innovation v. bureaucracy
6) Turnover of elected officials
7) Influence of special interest groups

ULCT: local authority is enshrined in law

- State Constitution, Art. XI Sec 5:
  - Levy, assess, & collect taxes/assessments; borrow money
  - Furnish all local public services
  - Make local public improvement

Utah Code 10-8-84: "city may pass all ordinances necessary and proper to …"

  - provide for safety and health
  - promote prosperity
  - improve the morals, peace, and good order, and comfort of the city and its inhabitants
  - protect property in the city

- UT Sup. Court: "general welfare power = independent (city) authority to pass ordinances"
- Information, research, #leaguearmy

PRESSURE POINT: ROLE OF GOVERNMENT

Who's the boss? Utah Legislature, Salt Lake City battling over local issues

Herbert says cities are 'subservient' to the state

By Dennis Romboy @dennisromboy
Published: Feb. 1, 2012 6:00 p.m.

18 Comments

"I don't like the Legislature being a super board of regents, or a super school board or super local government control."

But, he said, the "subtle" difference is that cities are political subdivisions of the state.

Still, the governor said legislators would be wise to listen to cities and counties to avoid unintended consequences of the bills they pass.

When a political subdivision of the state tries to circumvent fundamental rights, the Legislature should get involved, Niederhauser said.

Example of structure & “role of government:” drones

- Federal interest: jurisdiction over airspace
- State interest: uniformity of rules, emergency situations, protect public infrastructure
- Local gov’t interest: nuisance, law enforcement (public safety and police usage), local airports
- Should government even regulate drones?

Other drone related issues:

- Commercial industry (aerospace, farming, inspection)
- Hobbyists
- Privacy
- Property rights v. airspace
- Recordings of gov’t operated drones

PRESSURE POINT: PROPERTY RIGHTS

Example of conflict over property rights: HB 253 Short term rentals

Supporter arguments:

- Protect property rights
  - City preventing the exercise of property rights
  - City prohibitions are excessive
- Promote tourism
  - City preventing economic development
- Financial benefit to communities
- Impact of STRs will be minimal on neighborhoods

Local gov't arguments:

- Is the state a planning commission?
- Is the state responsible for local code enforcement?
- City balances property rights of all property owners in the neighborhood
- City is the most responsive level of government for neighborhoods and communities

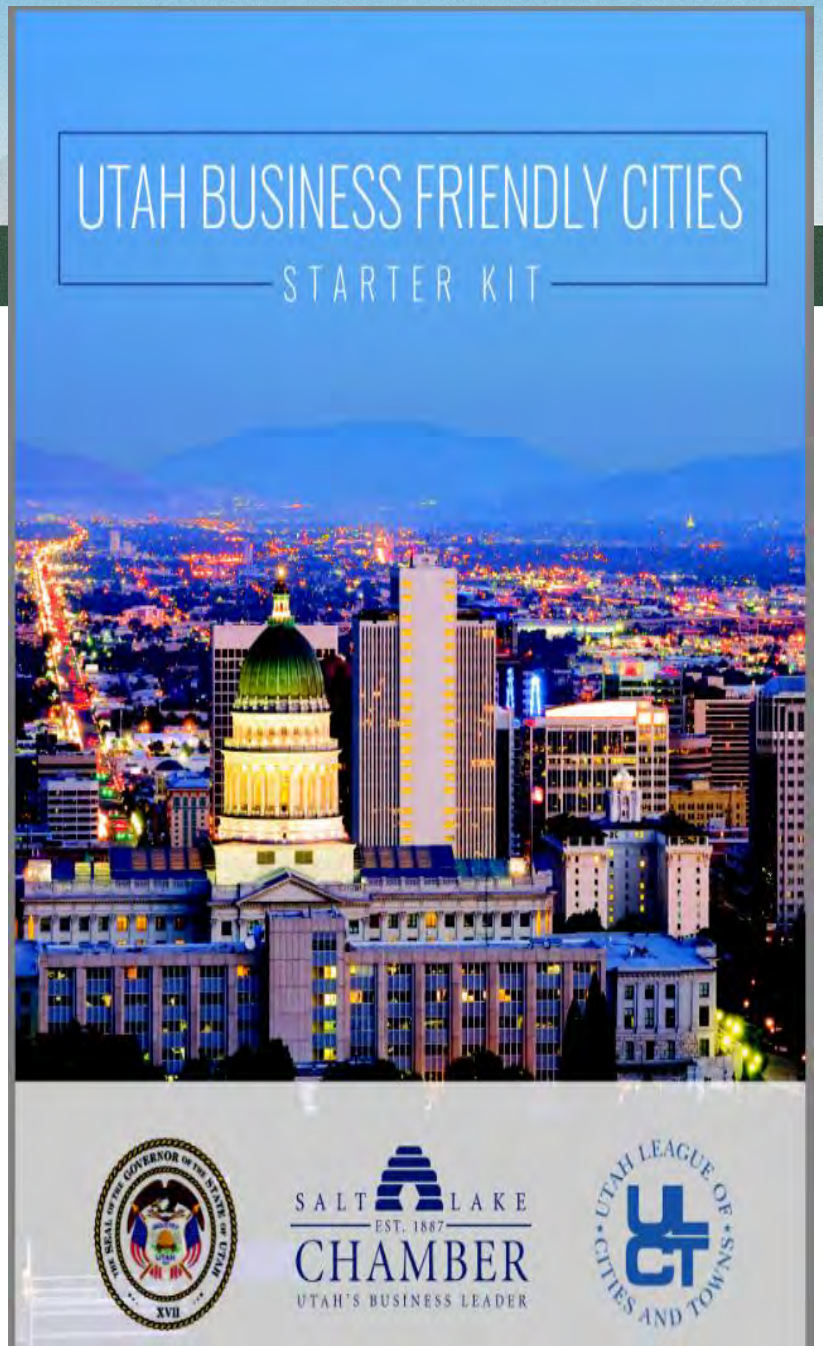
PRESSURE POINT: ECONOMIC DEVELOPMENT

Bills on point

- SB 81: Local Gov't Licensing
- SB 241: Local Gov't Plan Review
- SB 250: Food Truck Licensing & Regulation

Let's be proactive, introspective, and collaborative with the business community:

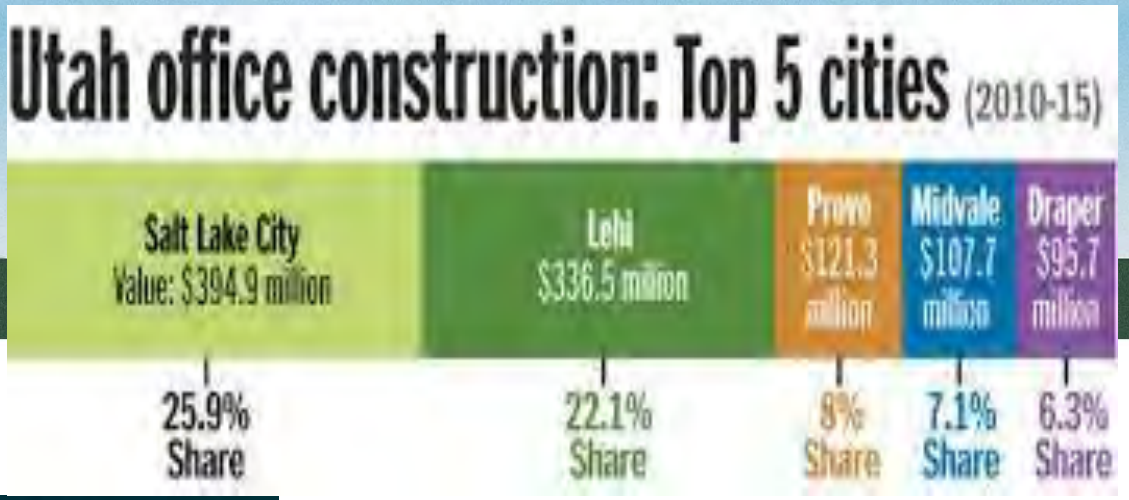
http://slchamber.com/businessfriendlycities/

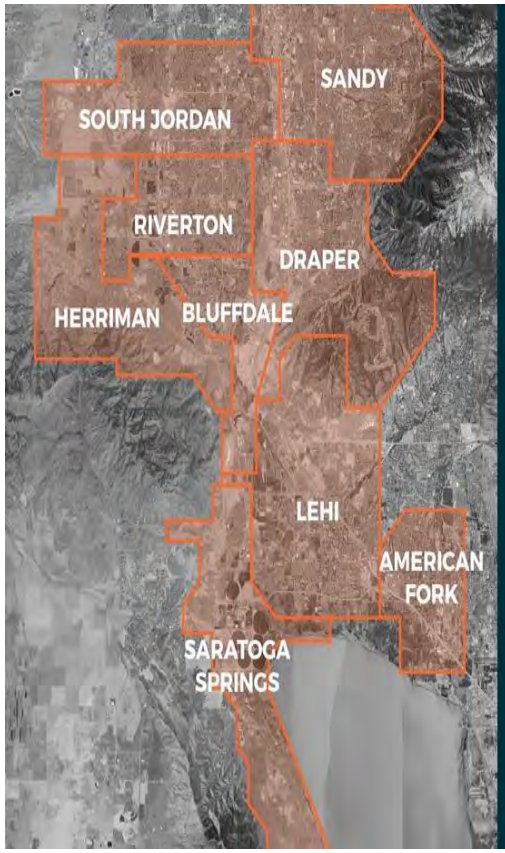


PRESSURE POINT: STATE PRIORITY

State interest, money, & priority: prison relocation

Next steps?





Many Jurisdictions

- Bluffdale
- South Jordan
- Riverton
- Herriman
- Draper
- Lehi
- Saratoga Springs
- Eagle Mountain
- Sandy
- Salt Lake County
- Utah County
- State

POLITICS

The End of Local Laws? War on Cities Intensifies in Texas

Gov. Greg Abbott, an outspoken critic of federal overreach, recently suggested that his state should adopt a "ban across the board" on local regulations.

BY DANIEL C. VOCK | APRIL 5, 2017

What our special interest opponents are doing

Tactics of our special interest opponents: mailers, social media, delegates, attacks

Because your property rights **DON'T EXIST**

All around the state, many cities heavily **restrict** or altogether **prohibit** home owners from sharing a room or basement with those visiting our city. It's called a short-term rental, and services like airbnb and VRBO help connect home owners with those needing a place to stay.

When cities prevent property owners from sharing their homes, that's less competition for the hotels, which can charge higher rates as a result.

UTAH'S CONSTITUTION:

"It is the policy of the state of Utah that a ***free market system*** shall govern trade and commerce in this state..."

Want your aunt to stay with you for a week? Nobody argues against that. Want a traveler to stay with you for a week? Suddenly it's a problem—even though the impact (or lack thereof) to neighbors is the same.

This isn't a free market. It's **protectionism**.

We say it's time to fix the law. ***Do you agree?***

SIGN THE ***30-SECOND*** PETITION AT

FreeMarketUtah.com

Where we've been: the 2017 legislative categories

- Infrastructure
  - HB 152 (corridor $), SB 174 (task force), SB 264 (TRT), SB 276 (gas tax), SB 277 (bonds)
- Tax Reform
  - SB 110 (online), education $, Our Schools Now initiative
- Justice Reinvestment Initiative
  - $$$, HB 178 (good LL), HB 441 & HB 452 (homelessness), SB 251 (code enf)
- Transparency/governance
  - HB 164 (enterprise funds), HB 324 (notices), SB 69 (notices) SB 198 (UCA)
- Land use
  - HB 232 (LUTF), HB 355 (signs), HB 442 & SB 279 (alcohol), SB 241 (plan check)
- Consistency/uniformity/efficiency
  - HB 115 (waste), SB 81 (home based business), SB 250 (food trucks)

Top 10 (11) bills to know: transportation

SB 276 Transportation Funding

Reason: inflationary piece; implement intent of HB 362 (2015)

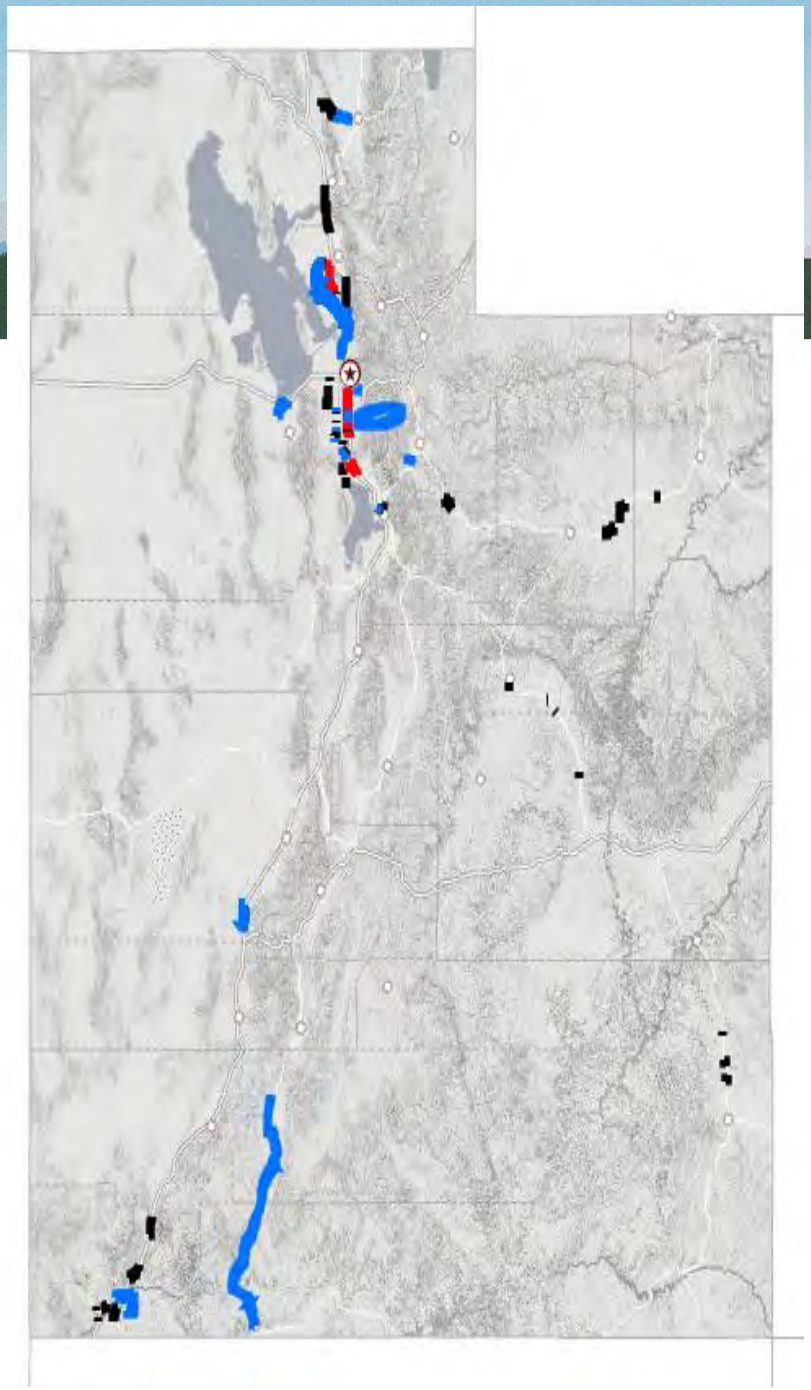
- 12% gas tax will be 16%
- Floor moves from $2.45 to $1.78
- Ceiling moves from $3.33 to $2.43
  - State will reduce the amount of sales tax into the Transportation Investment Fund (TIF) by an amount equal to 35% of the gas tax increase

Local impact:

- No B&C formula change
- Result: expected increase in B&C revenue

SB 174 Transportation Governance

- Task Force, recommendations by Dec 1
  - 2 Senators, 1 private sector
  - 2 Reps, 1 private sector
  - 1 Transportation Commission
  - 1 from UTA
  - **1 from ULCT**
  - 2 from UAC (1 rural)
  - 1 from MAG
  - 1 from WFRC (Chair)
- Evaluate all forms of transportation
- Consider governance, funding, land use, economic development, population growth, best practices



SB 277: $1 billion in bonds over 4 yrs

- www.udot.Utah.gov
  - Project list and public comment link
- Last week: UDOT recommended 58 projects in 19 counties
- April 12: Transportation Commission will issue draft recommendation
- May: final list
- June: report to legislature
- July: bonding begins

Top 10 (11) bills to know: people are watching

HB 253: Short term rentals

- Focus on online ads, not land use
- Leg. body may not enact an ordinance that prohibits an individual from listing or offering a STR on a STR website
- Leg. body may not fine, charge, prosecute, or punish an individual solely for the act of listing or offering a STR on a STR website
- Thanks #leaguearmy

HB 164 Enterprise Funds

- Bill does NOT limit the transfer of funds from enterprise fund to general fund
- Focus on transparency of fund transfers

Step 1: Enhanced notice with specific info

Step 2: Independent hearing

Step 3: Submit specific info to auditor

Step 4: Follow up notice

- Thanks #leaguearmy

Step 1: Enhanced notice and specific information

7 days before hearing: specific info and multiple communication channels

Specific information:

- $ of transfer from enterprise fund to general fund
- % of total enterprise fund expenditures represented by each transfer
- Date, time, place, and purpose of hearing

Communication:

- Post, on Utah Public Notice Website
- Post, on website prominently if you have a website
- Post, on social media if you have social media
- Mail, if you mail a periodic billing
- Email, if you email

HB 164 Steps 2, 3 and 4

Step 2: independent enterprise fund transfer hearing

- Public comment, accounting data
- May be same day as budget hearing

Step 3: Auditor

- Within 30 days of adopted budget, submit specific information to the Auditor's office with a copy of the notice

Step 4: Follow up notice

- Within 7 days after adopted budget, post enterprise fund accounting data on city website and social media (if applicable)
- Within 60 days after the budget, mail/email to users about the transfer

Top 10 (11) bills: SB 198 Utah Communications Authority

New Board Composition (9 members)

- 3 appointed by Governor
- 1 by Speaker of the House
- 1 by President of the Senate
- **2 by Utah League of Cities and Towns**
- 2 by Utah Association of Counties
- Board member cannot be vendor or person involved now in entity that will directly benefit from UCA contracts
- Board appointed by Governor with Senate advice & consent

Operations Advisory Committee created

- Reports directly to the board
- Comprised of system users and vendors
- Reps from: Fire Chiefs, Police Chiefs, Sheriffs, EMS, PSAP, UDOT, DPS, DTS, Tribes, chair of each of the 7 regional advisory committees, and 3 vendors

Top 10 (11) bills to know: SB 198 cont.

EMERGENCY SERVICE FUND FEES: $1.18

- Local PSAP (public safety answering point): $0.71 (up from $0.61)
  - Increase of $3.5M in money distributed to PSAPs throughout the State
  - Distribution changed to be based on call volume
  - 2 year hold harmless
- Statewide 911 Fund: $0.09 – remains the same
- UCA O&M: $0.18 (new)
  - Current radio user fees will be repealed July 1, 2017 (if bill passed with funding)
  - Savings of $4M for local government and $3M for State users
- 800 MHz System Upgrade: $0.20 (new)
  - Money will be used for debt service on a bond to upgrade the current 800 MHz system

Top 10 (11) bills: licensing (workshop & aid to come)

SB 250: Food trucks

- Food trucks
  - not food carts or ice cream trucks
- No mandatory background checks
- Licensing fee = cost of regulation
- No extra fee per truck location
- Reciprocity
  - Business license reciprocity (city)
  - Health department reciprocity (county)
  - Fire safety reciprocity (all)
- May not prohibit operation of food truck within a *given distance* of a restaurant

SB 81: Home occup. bus. license

All business licenses: city may license for regulation … "and may impose fees *to recover the city's costs of regulation*"

Exceptions:

"City may not require a license for an occasional business operated by a minor"

"City may not charge a license fee unless the combined offsite impact of the home based business and the primary residential use materially exceeds the offsite impact of the primary residential use alone"

NOTE: CITY DEFINES IMPACT

Top 10 (11) bills: land use & alcohol

HB 232: Land Use

- Courts shall *defer to local legislative authority* to enact land use regulations
  - Engineering standards must be adopted by ordinance to earn deference
  - Local gov'ts must update ordinances
- Courts shall enforce "plain meaning" of *legislative* land use regulations
  - Tie goes to the runner
- Courts shall review local decisions that *administer* local land use laws to determine if they were "correct"

HB 442 and SB 279: Alcohol

- Reduced proximity of restaurant to community location from 600 feet to 300 feet (pedestrian)
  - Church, park, playground, school
- Removed DABC authority to issue variance
- Grandfathers all current licensees and locations, regardless of whether a community location later appears

Honorable mention: failed but coming back

SB 110 Online Sales Tax

- Utah has lost $80-$350 million in sales tax revenue currently owed and not collected
- 28 states have acted
- Economic nexus: transact $100,000+
- Affiliate nexus: affiliate is company's agent
- Bill passed Senate but failed 5-5 in House committee

HB 452 Homeless Services

- Statewide operation & maintenance revenue
- Mechanism: started as sales tax, became property tax
- Credit of $900 per bed to city to cover costs
- Qualifying homeless shelters:
  - Initial intent: new shelters in SL County, but sponsor willing to ensure all shelters would qualify
- Bill failed 4-4 in House committee

Plus the concepts of 96 local gov't related bills in 2017 that did not pass

Policy questions in 2017: *the more things change, the more they stay the same*

- What is the proper balance of state authority/action?
  - ULCT strongly opposes the "one size fits all" approach to legislation
  - ULCT realizes that "just because you can, does not mean you should" … self-evaluate
  - ULCT intends to be a partner with the state on their priorities
  - ULCT is cautious about "government by task force"
- How can local governments become more transparent, efficient, and "business-friendly" without becoming uniform?
- How can the state and local governments collaborate and invest in necessary infrastructure and prepare for Utah's ongoing population growth?
- What are the benefits, costs, & consequences of the Justice Reinvestment Initiative (JRI) and other state priorities on local government?

Power 101

2017 UMPA Summit

AGENDA

History of Power

Generation

Distribution

HISTORY of POWER

It’s shocking

History of Power

Generation

Distribution

Ben Franklin with a key and a kite

You see it, right?

War of the Currents

AC⚡DC

History of Power Generation Distribution

US Electrical Grid Today

- East
- West
- Texas
- Alaska

Generation

1.21 Gigawatts?!

Base Load Generation

Base Load Generation

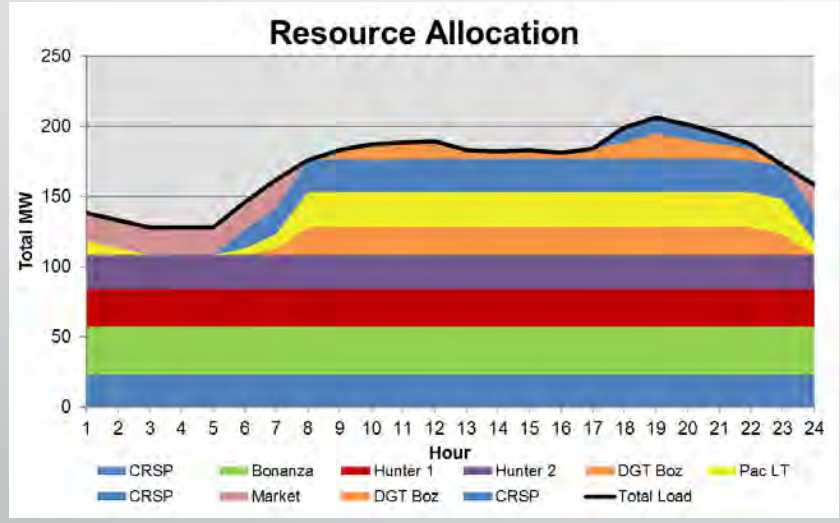
Intermediate Load Generation

Peak Load Generation

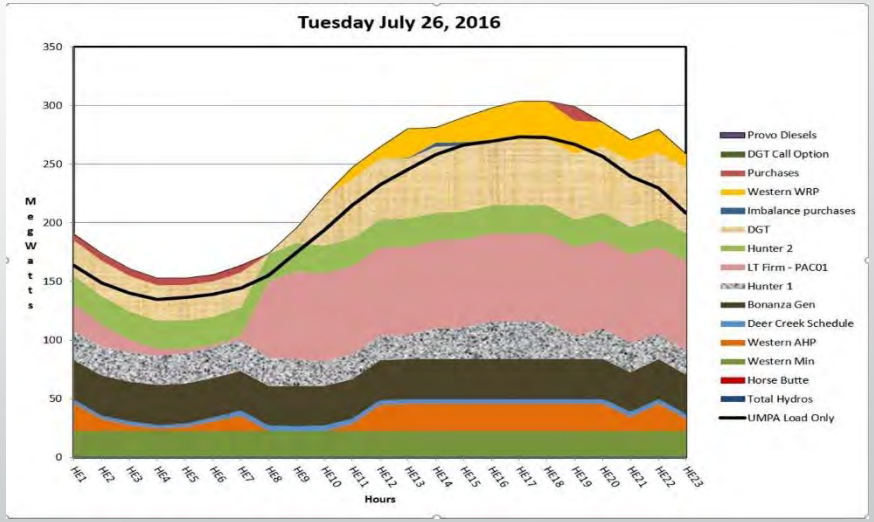
Intermittent Generation

UMPA Load

Winter Load Curve



Summer Load Curve



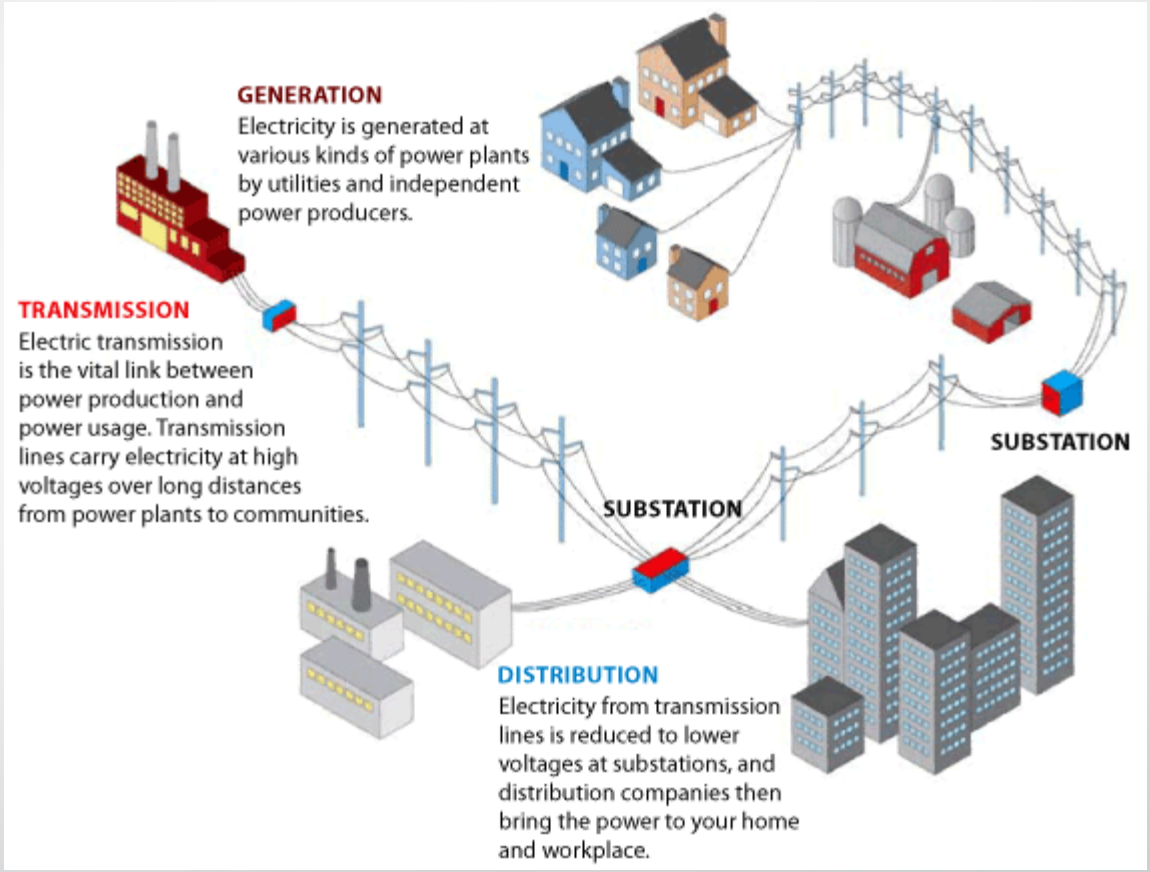
DISTRIBUTION

Watts up with that?

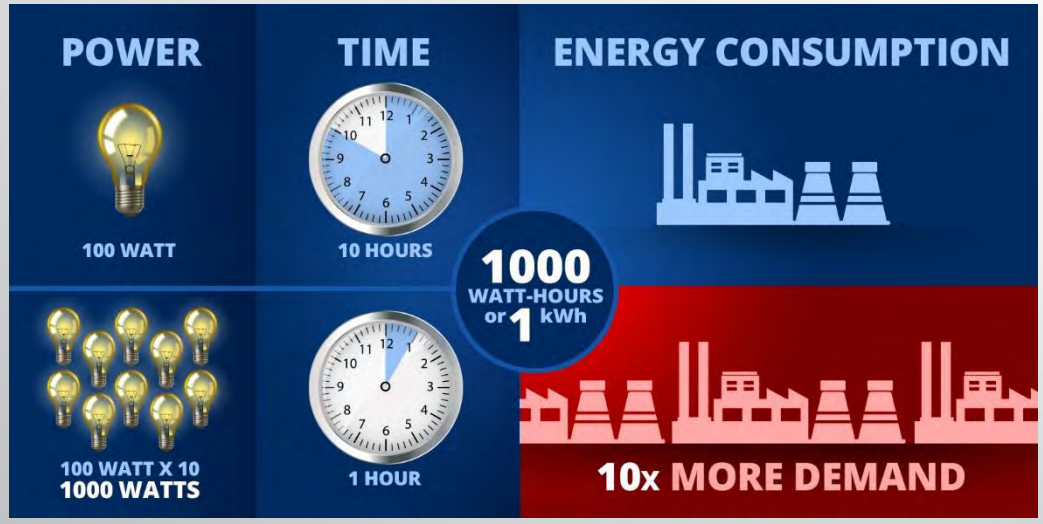
Modern Distribution

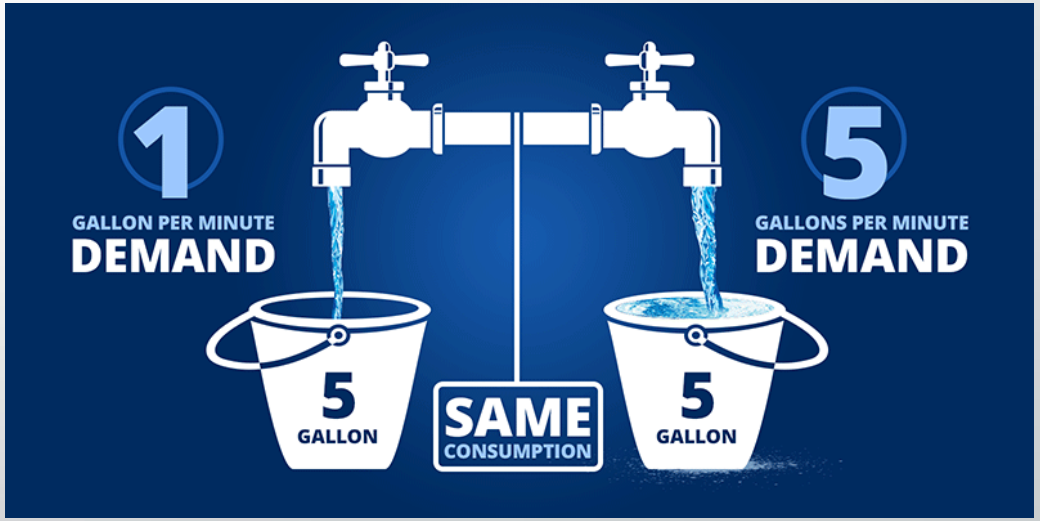
"Electricity is really just organized lightning"

-George Carlin



kW vs kWh


POWER
TIME
ENERGY CONSUMPTION
100 WATT
10 HOURS
1000
WATT-HOURS
or 1 kWh
100 WATT X 10
1000 WATTS
1 HOUR
10x MORE DEMAND


1
GALLON PER MINUTE
DEMAND
5
GALLONS PER MINUTE
DEMAND
5
GALLON
SAME
CONSUMPTION
5
GALLON

QUESTIONS?

Dr. Hank R. Smith

Dr. Henry “Hank” Smith grew up the son of a golf professional in sunny St. George, Utah. After earning a Bachelor’s Degree from Dixie State University, Hank earned a Master’s Degree in Business Administration from Utah State University. Most recently, Hank completed his PhD at Brigham Young University where he now works as an instructor.

In addition to his work corporate training and education consulting, Hank enjoys speaking at assemblies for elementary, junior high, and high schools around the country.

Hank has been published in journals and books around the world. His article, “Trust at Ground Zero: Trust and Collaboration within the Professional Learning Community” was recently featured in the bestselling international book, “Trust and School Life.” Hank has also authored many books and “Audio CDs” with Deseret Book and Covenant Communications and speaks for tens of thousands of youth and adults each year.

Hank enjoys running marathons and eating lots of ice cream, which is why he runs marathons.

Hank, his wife Sara, and their 5 adorable children currently live in Mapleton, Utah.

Desmarie Waterhouse is Vice President of Government Relations & Counsel at the American Public Power Association ("APPA"). At APPA, she leads the association's advocacy efforts before Congress on a variety of issues impacting public power, including energy, environmental, tax, and grid security issues. She has over 20 years of experience in government affairs, both as a congressional staffer and as a lobbyist.

Prior to joining APPA, she was Director of Government Affairs for Ygomi LLC, an international holding and operating company for technology services, headquartered in Oak Brook, IL. There she worked on spectrum, broadband, and transportation issues. Ms. Waterhouse has also worked for a boutique lobbying firm where she provided clients with strategic advice on the development and implementation of their government relations agenda and at National Public Radio ("NPR").

She also spent over six years on Capitol Hill, beginning her career with Senator Daniel Patrick Moynihan, then moving over to the House of Representatives and working for Representative Karen McCarthy handling telecommunications and technology issues coming before the House Telecommunications & Internet Subcommittee, of which the Congresswoman was a member.

Ms. Waterhouse graduated from Duke University with a BA in political science and history. She spent part of her junior year studying abroad in Florence, Italy, where she studied Florentine art and Italian literature. She also holds a Master's degree in Public Policy from Georgetown University and a JD from the Catholic University of America Columbus School of Law. Ms. Waterhouse is licensed to practice law in Maryland.

DOUGLAS HUNTER, CHIEF EXECUTIVE OFFICER AND GENERAL MANAGER
UTAH ASSOCIATED MUNICIPAL POWER SYSTEMS

Mr. Douglas Hunter is the Chief Executive Officer and General Manager of Utah Associated Municipal Power Systems ("UAMPS"). Mr. Hunter joined UAMPS in December of 1983 and is a 35 year veteran of the electric utility industry. Prior to his appointment as General Manager in 1995, he served as Assistant General Manager and Manager of Municipal Resources of UAMPS.

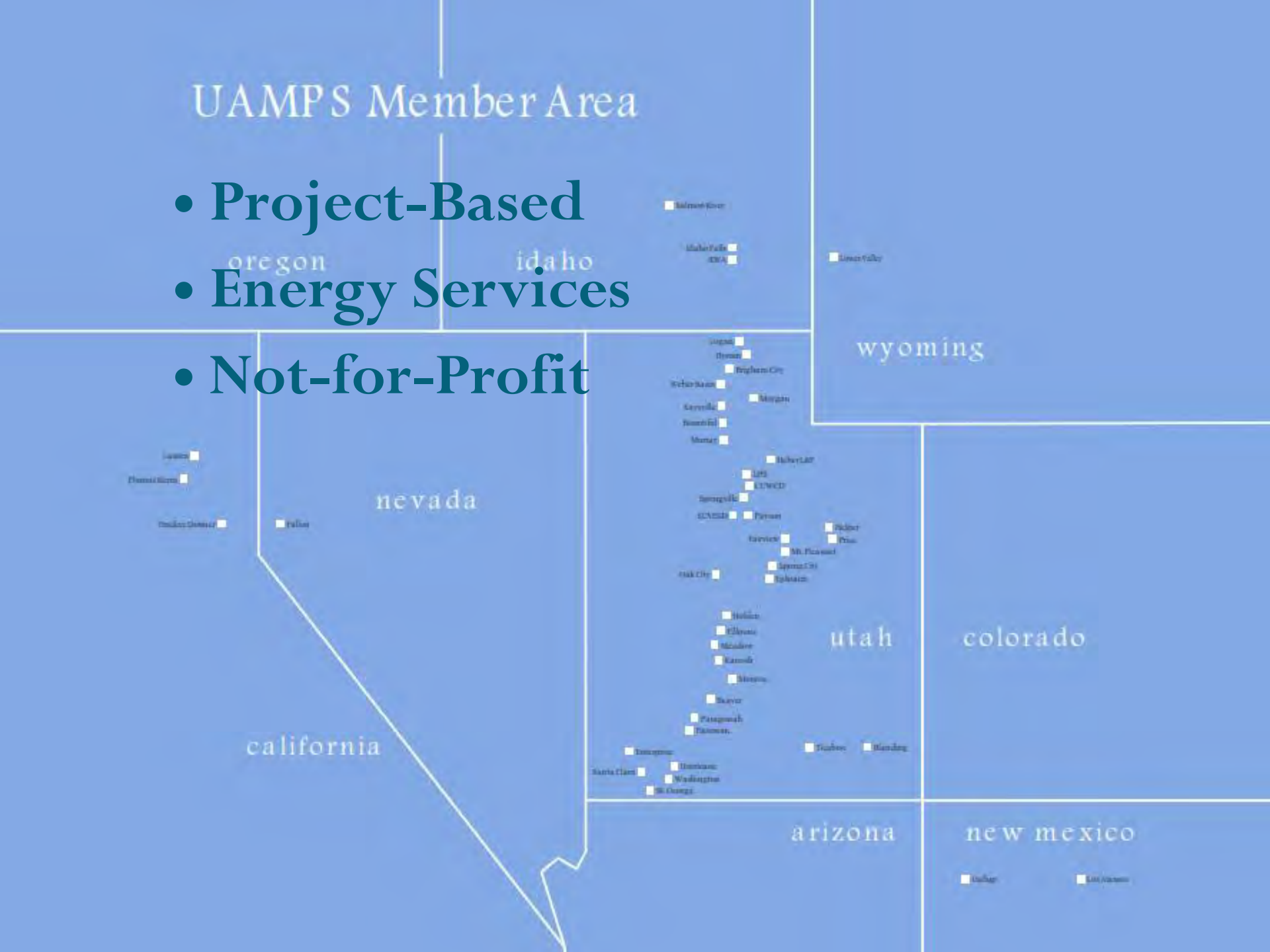
Mr. Hunter holds a Master of Business Administration degree from Utah State University and a Bachelor of Science degree in Biochemistry from the University of California, Davis. He currently serves as the past Chair on the American Public Power Association's (APPA) Executive Committee and has served on the APPA Board of Directors.

Utah Municipal Power Agency
Annual Member Conference

April 21, 2017

UAMPS
Utah Associated Municipal Power Systems

SMARTENERGY



- **Project-Based**
- **Energy Services**
- **Not-for-Profit**

Regulation & Market Complexities

- Coal
  - Clean Air Act of 1970
    - 111(b) – New Source Performance Standards
    - 111(d) – Clean Power Plan
    - Regional Haze Rulings
  - Plant life
  - Fuel
  - Competitiveness

LEAMPS SMARTENERGY

Regulation & Market Complexities

- Federal Power Act 1935
  - Regional Transmission Markets
    - California Independent System Operator (CAISO)
    - Mountain West Transmission Group (SPP West)
  - Energy Imbalance Market (EIM)
  - Reliability
    - Ramp Rate
- Public Utility Regulatory Policies Act 1978 (PURPA)
  - Integrated Resource Plans (IRP)
  - Low priced renewable energy projects

Regulation & Market Complexities

- Energy Policy Act of 2005 (EPC '05)
  - Exempted hydraulic fracturing from Clean Water Act
  - Clean coal initiative
  - Tax credits for wind, solar, energy efficiency and nuclear
  - Public electric utilities must offer net metering
  - DOE loan guarantees
  - Extended daylight savings time by five weeks
  - Set electric grid reliability standards

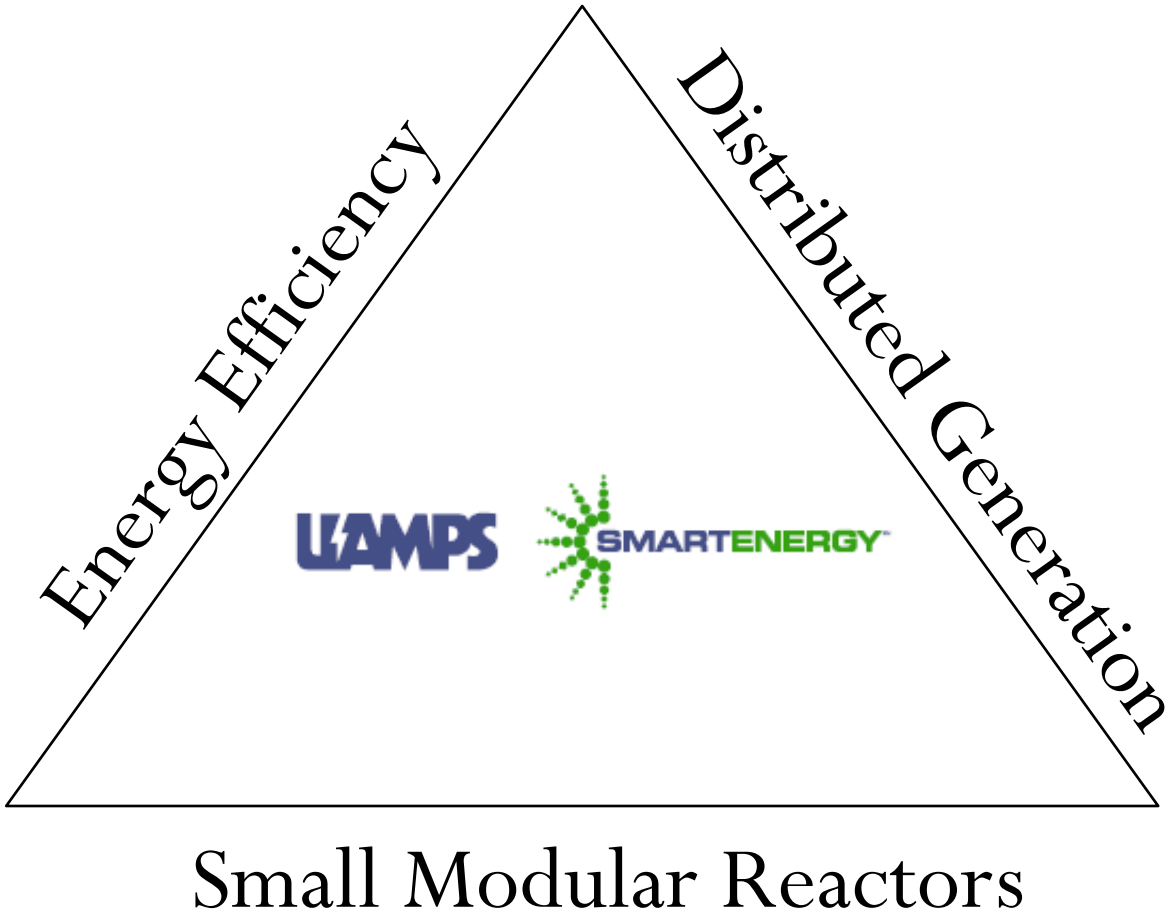
Regulation & Market Complexities

- Renewable Energy
  - Endangered Species Act of 1973
  - Migratory Bird Treaty Act of 1918
  - Bald & Golden Eagle Protection Act of 1940
- Natural Gas
  - Clean Water Act of 1972
  - What is the end-goal for C02 reduction
  - Fuel price volatility

Regulation & Market Complexities

- Load growth
  - Energy efficiency
  - Distributed generation
  - Replacement capacity
  - Future power market

Carbon Free Power Project



Why the CFPP

- Energy Efficiency
  - Engages customers through savings and community
  - Natural technology progression
  - Stranded investment reducer
- Distributed Generation
  - Engages customers through capital investment
  - Solar PV, batteries and fuel cells
  - Stranded investment reducer

Why the CFPP

- NuScale technology
  - Cost competitive
  - Reduced exposure to environmental regulations
  - Modular generation additions
  - Small footprint on the land
- Phased development approach provides UAMPS the ability to gain clarity on regulation and market complexities compliance costs and compare these costs relative to the costs of proceeding with the CFPP

Why the CFPP

- Cost competitiveness provides UAMPS with:
  - Free option as to carbon regulation in the future
  - Fuel stability
  - Stable regulatory environment
- Multiple generation fits well into future market structures
  - EIM participation
  - Fast ramp rate
  - Integration of variable resources

DOE Assistance Agreement

- Pursuant to DOE Assistance Agreement award DE-NE0008369 Site Permitting and Licensing of the NuScale SMR:
  - DOE Cooperative arrangement – 50% of all eligible project costs under this award ($16.6M)
  - NuScale and UAMPS have agreed to an elective Cost Sharing Option (CSO). Under the CSO, and UAMPS' election, NuScale will pay for 25% of all eligible project costs under this award (not to exceed $1.6M)

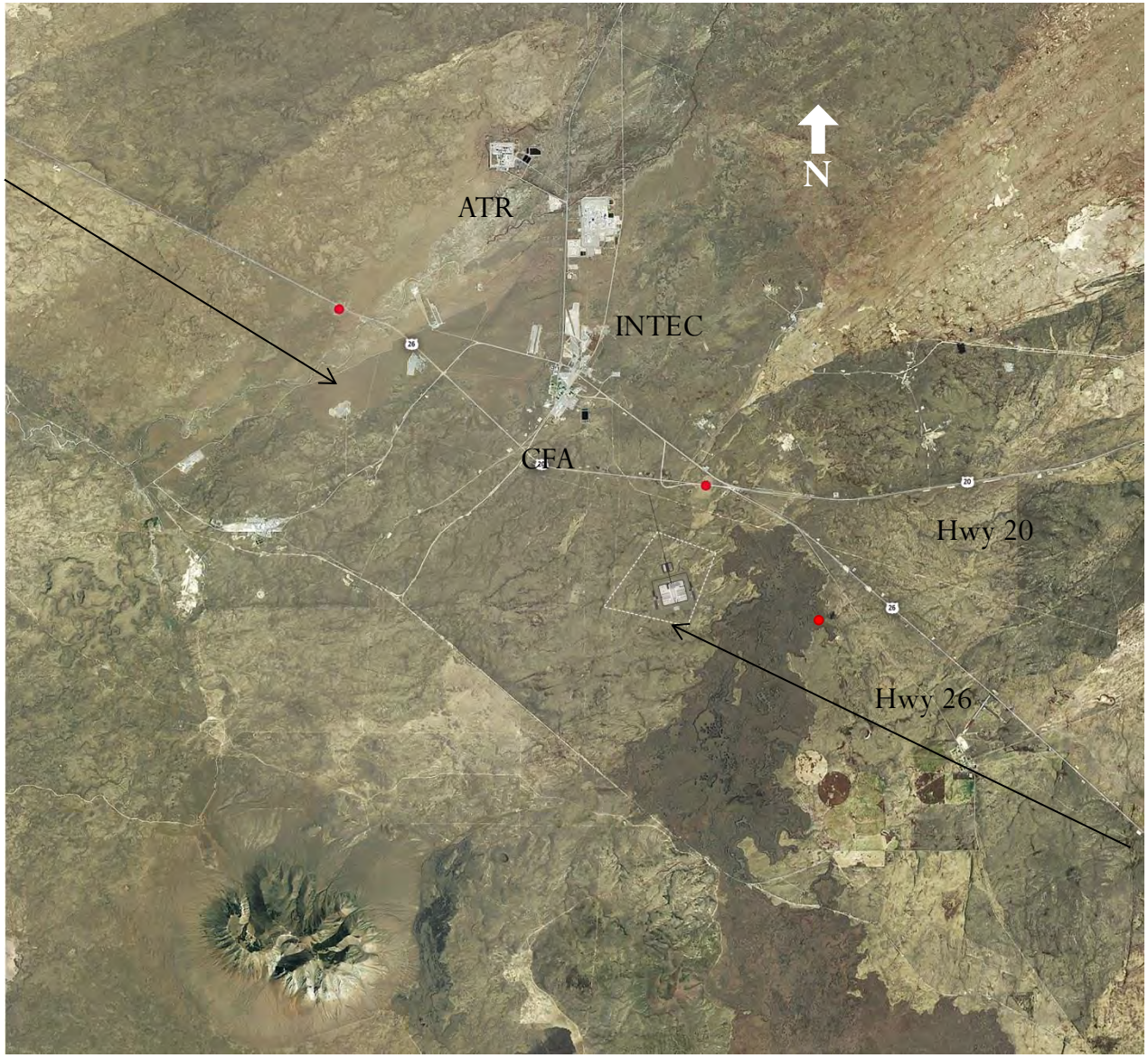
Site Use Permit

- Parties:
  - Department of Energy and UAMPS
- Executed:
  - February 16, 2016
  - Terminates on February 16, 2125 unless extended or terminated pursuant to the Site Use Permit
- Term:
  - 99 year term that commences upon COD of the first nuclear power module (NPM) at the CFPP and no later than 2026 unless UAMPS has been diligently pursuing its NRC license
    - Term should allow for all 12 nuclear power modules to operate for 80 years (initial 40 year term + 2 license renewals of 20 years each)
  - Term adequately accounts for timeframe to decommission in a cost effective manner
    - Option to extend for 10 years for "sound reasons" (decommissioning)
    - Note: NRC license still in place until decommissioning complete

Idaho National Laboratory Site

Satellite View of Site

Big Lost River Rest Stop

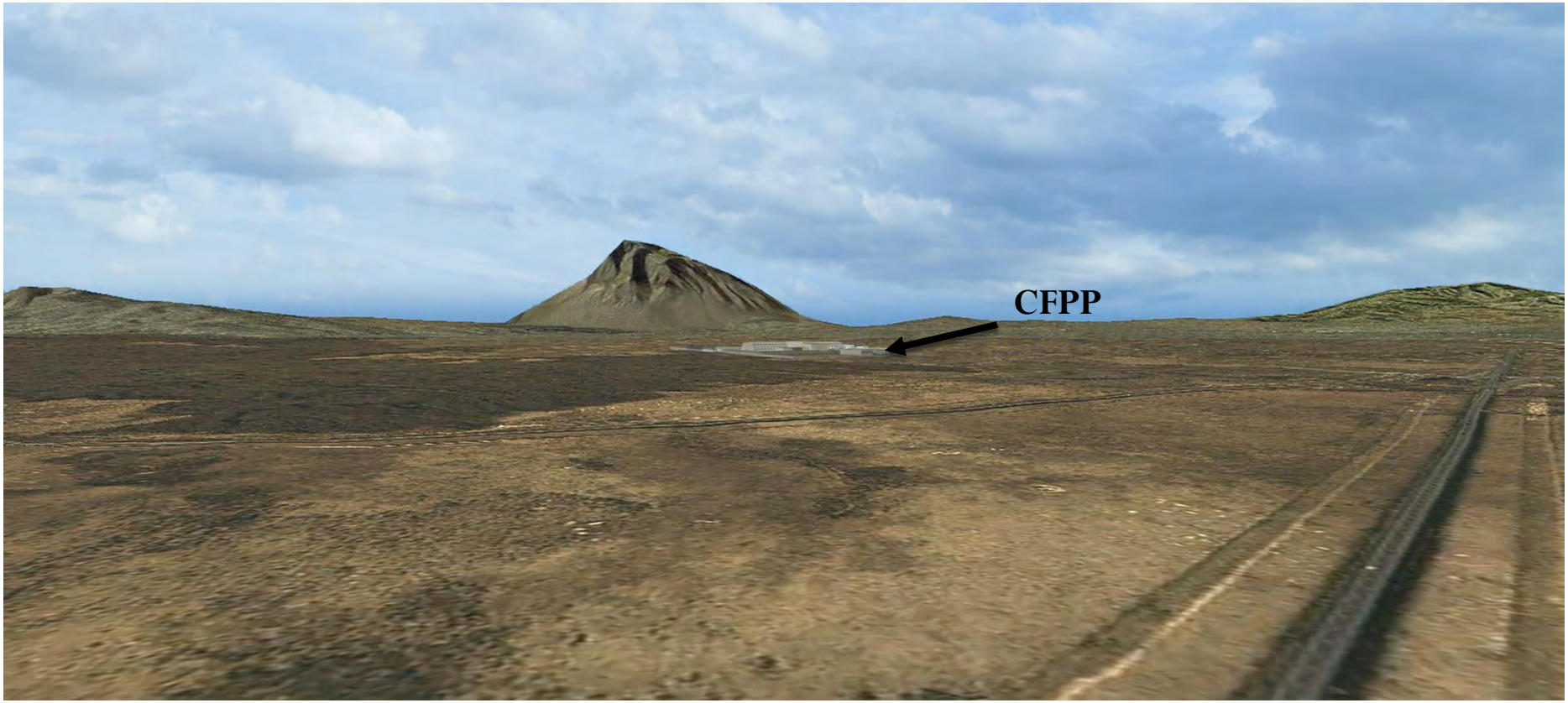


Proposed location of CFPP Site (approximate)

Note: the actual location has not yet been determined within the boundary

View of Site – Closest Highway Approach

(On Hwy 26 approaching junction with Hwy 20, viewing elevation of ~ 100')



Southwest

Renewable Resource Integration

- A study was performed by NuScale, UAMPS and Energy Northwest that was presented by Dr. Reyes to ICAPP* that showed that a single NuScale reactor paired with UAMPS Horse Butte Wind Farm would be able to follow load on a real time basis

*International Congress on Advances in Nuclear Power Plants

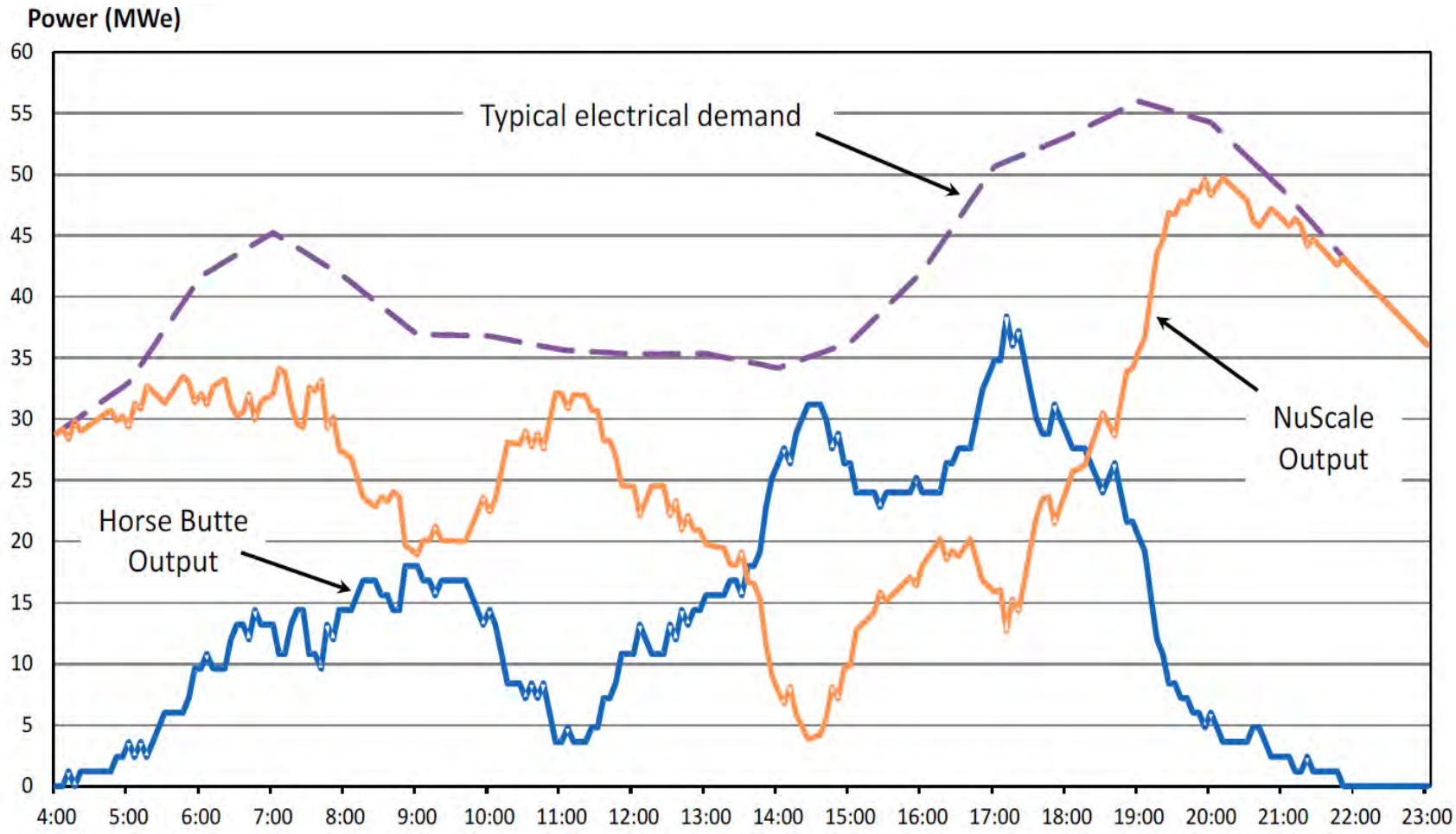


Fig. 5. Example of NuScale module load-following to compensate for generation from the Horse Butte wind farm and daily demand variation.

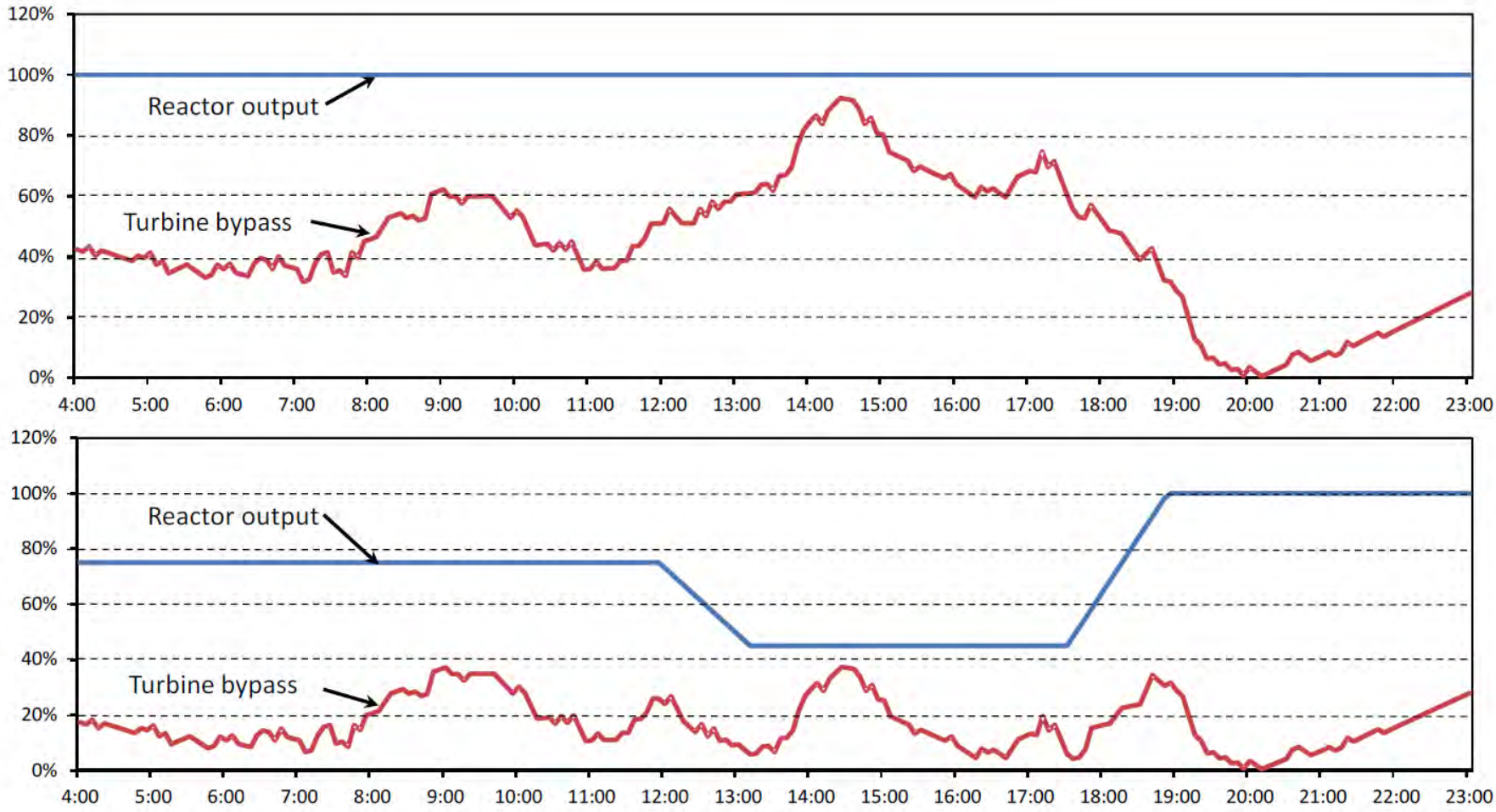
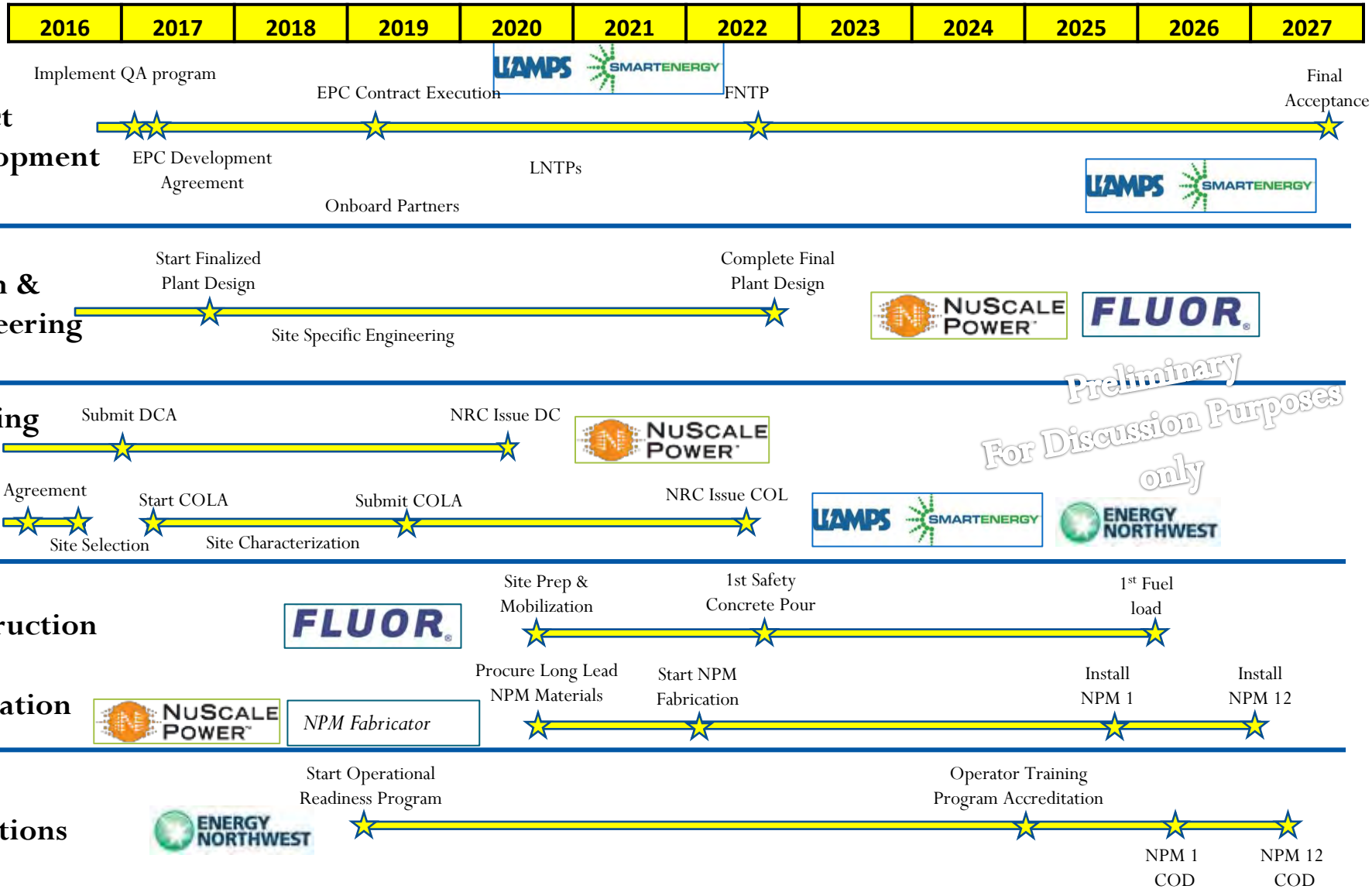


Fig. 6. Two load-following options to achieve the NuScale module output shown in Fig. 5: use only turbine bypass (upper graph), or use combination of reactor power maneuvering and turbine bypass (lower graph).

UAMPS CFPP Project Schedule

November 2016



Contact Information

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155 North 400 West, Suite 480
Salt Lake City, UT 84103
801-214-6401
doug@uamps.com

Jerame Blevins

I started in the power business in 2001 when I went to work for ACE Cogeneration in my home of Trona, CA. ACE was a 108MW CFB (Coal) facility owned by Constellation Energy. After 7 years at ACE in the Operations department, I put in for a transfer to the West Valley Plant that Constellation Energy had purchased. In 2012 I became the Plant Manager of the West Valley Plant.

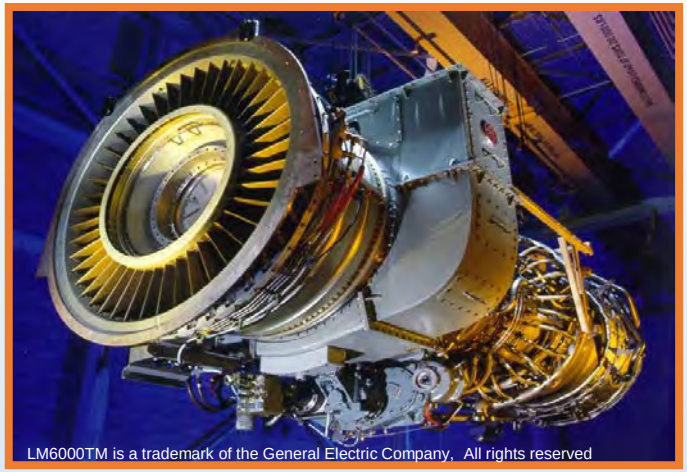
UTAH MUNICIPAL POWER AGENCY

West Valley Power

Plant History

- **Built between 1999 – 2001 for Scottish Power**
- **Leased to PacifiCorp from 2001 – 2008**
- **Purchased from Scottish Power by Constellation Energy in June 2008**
- **Constellation Energy merged with Exelon in March 2012**
- **Exelon Generation sold West Valley to Wayzata December of 2014**
- **UMPA purchased the Facility August 1st of 2016**

West Valley Power



- 200 MW facility consisting of:
  - 5 LM6000PC Simple Cycle Gas Turbines with Liquid NOx Control, Spray Mist Evaporative Cooling, and Enhanced Sprint
  - Fuel is High Pressure natural gas supplied by Kern River Gas
  - Air Cooled Brush Generators rated at 71MVA
  - CO and SCR Catalyst utilizing 19% Aqueous Ammonia
  - Continuous Emissions Monitors
  - 200 GPM Demineralized Water Plant
  - 2 3100HP Decommissioned and potentially available Gas Compressors

West Valley Operations

- West Valley is Operated by North American Energy Services (NAES)
- NAES is a 3rd Party operating company that provides a variety of services including:
  - Plant Operations and Maintenance
  - Engineering & Technical Services
  - NERC Compliance Services
  - Environmental Compliance Services
  - Fabrication, Maintenance & Construction Services

West Valley Operations Continued

- West Valley Power has evolved to run in an ever changing marketplace over the last decade
  - Merchant Operations – From June 2008 until August 2011 the plant was largely sold day ahead for single or split peak runs ranging from 3-16 hours per day. Always at base load
  - Tolling Operations – Facility was used by PacifiCorp to help balance generation with load. Facility would start and stop as required up to twice per day. And run from minimum load to full load as needed
  - Energy Imbalance Market – in 2016 the facility joined the EIM market. Primarily operating split peaks with varied loads.

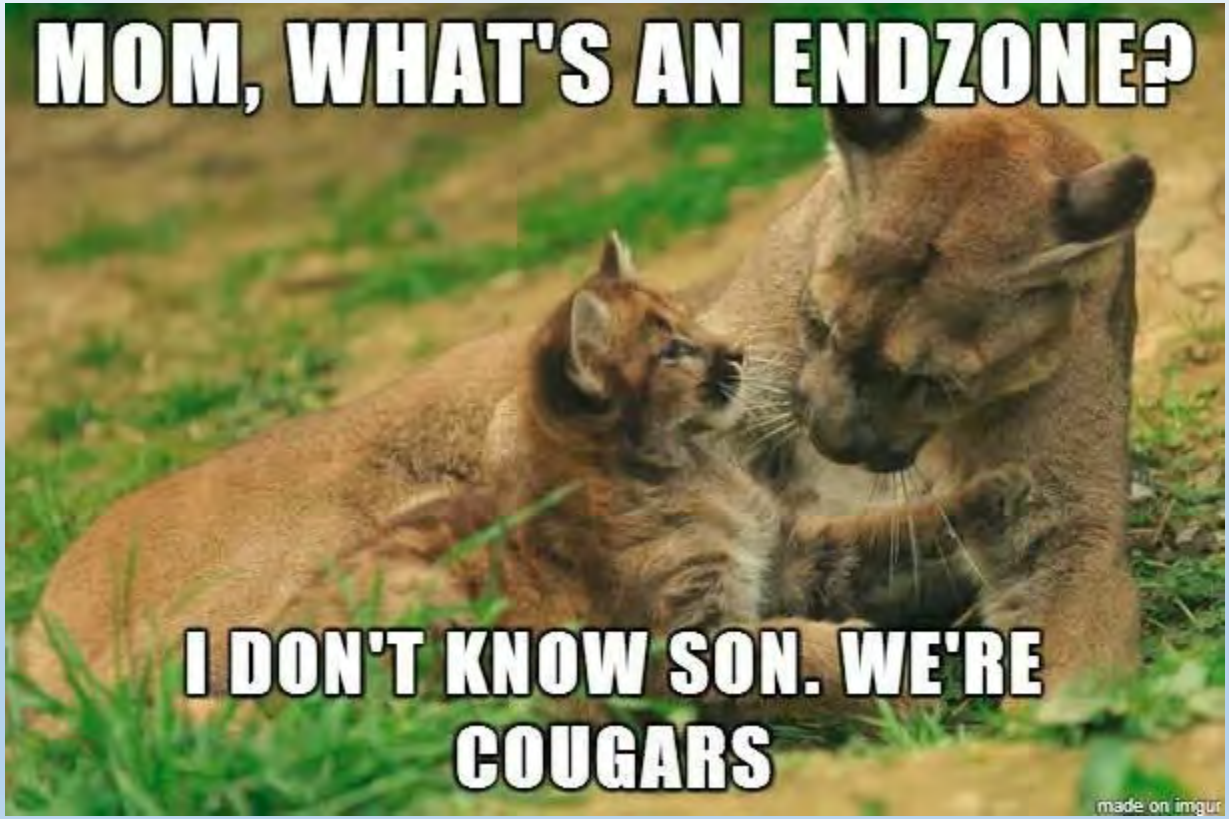
Strong Safety Culture

- 0 Recordable or lost time injuries
- Safety Observations Completed regularly to reinforce safe behavior and correct at-risk behavior
- All plant personal participate in monthly Plant Safety and Safety Committee meetings
- Safety Action Plans developed by Plant Safety Committee provide continuous improvement
- Weekly housekeeping and safety inspections performed by Management

Environmental Excellence

- 0 NOVs or exceedances
- Greater than 98% Emission Monitor Availability
- Strong relationship with the DAQ/DEQ
- Annual CEMMS predictive maintenance performed by the OEM to increase reliability
- Annual compliance training for all employees

Questions?


MOM, WHAT'S AN ENDZONE?
I DON'T KNOW SON. WE'RE COUGARS
made on imgur

Ken Green

Ken Green has worked for Wheeler Machinery Co for over 45 years 43 of them in the in the Power Systems division. He is currently serving as the Business Development Manager. He has also served as the Vice President of Wheeler Machinery/General Manger Power Systems Division, Sales Manager, Utility Governmental International Sales and Engine Sales. Ken Green has worked on numerous power generation projects both domestically and internationally. He currently sits on the Caterpillar Utility Dealer Advisory Committee as well as the Caterpillar Gas Engine Dealer Advisory Committee.

Ken Green is well known and a trusted partner with a plan and goal to deliver only top quality equipment and services on every project.

Ken and his wife Julie celebrated their 46 year wedding anniversary early this month and they are the parents of 4 children and grandparents to 13 grandchildren. He was presented with the Silver Beaver scouting Award by the Great Salt Lake Council of the Boy Scouts of America.

Ken enjoys his family and traveling in his free time.

Select Project Experience

- Distributed Power Generation Stations for the U.S. Army Dugway Proving Grounds; Salesman, Design Consultant
- Heber Light and Power Distributed Generation Facilities; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- Hurricane City Power Department Distributed Generation Facilities; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- City of Santa Clara Power Distributed Generation Facilities; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- St. George City Energy Department Bloomington Distributed Generation Facility; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- Questar Natural Gas Operations Center Combine Heat and Power Facility; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- Sao Tome International Broadcasting Bureau Station Generation Facility, Sao Tome; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- Tinian Island International Broadcasting Bureau Station Generation Facility, Salesman, Design Consultant, Commissioning Consultant, Project Manager
- Tinian Island Main Power Plant; Salesman, Design Consultant, Commissioning Consultant, Project Manager
- Standby Generators at Luxembourg Embassy; Salesman, Commissioning Consultant
- Chemical Disposal Facilities in the United States at Tooele, Umatilla, Aniston, Pine Bluff, Newport, Pueblo and Blue Grass; Salesman, Commissioning Consultant
- Chemical Disposal Facility in Shchuch'ye Russia; Salesman, Commissioning Consultant
- Wheeler has provided power solutions worldwide to the U.S. Army including other buildings at the U.S. Army Dugway Proving Grounds, U.S. Air Force, U.S. Department of State, International Broadcasting Bureau, as well as many private contractors. Salesman, Commissioning Consultant

Jason Soares

Experience

Jason Soares has worked for sixteen years in electrical and mechanical repair positions and has demonstrated his troubleshooting, repair, problem-solving and onsite customer relations experience. Jason is the Site Project Coordinator for new turnkey reciprocating engine power plants and complex power generation projects.

Jason is the on-site Project Manager and works directly with contractors and the customer at the job site to ensure timely delivery and proper installation of equipment, schedules commissioning and training sessions and ensures the customer's receive complete and functional power plant that meets the community's needs.

Jason and his wife Jennifer have been married for 19 years and have 5 children. Jason enjoys his family and together they enjoy their small business consisting of a small herd of Miniature Jersey Cattle that they own and sell throughout the US.

Education

Utah State University, Bachelor of Science in Agriculture Management
Diesel Mechanics Degree from Bridgerland (BATC) in Logan, Utah
Caterpillar Electrical Mining
GE Critical Power and GE Zenith Controls
Caterpillar Switchgear and Transfer switch
Caterpillar EMCP 4.X Controller
Caterpillar EPG Level 1, 2 and 3
Caterpillar EPG Paralleling
Control Systems Specialist
Electrical Green Card

Select Project Experience

- 111 South Main Emergency Standby Power System and Paralleling Switchgear; On-Site Project Manager
- Springville Power Plant, Co- Gen and Paralleling Controls On-Site Project Manager
- Biofire Emergency Standby Power System and Paralleling Switchgear; On-Site Project Manager
- Ebay Emergency Standby Power System and Paralleling Switchgear; Commissioning, Start up
- VA Medical Center Co-Gen Plant Emergency Standby Power System and Paralleling Switchgear; On-Site Project Manager
- Cripple Creek Victor Gold Mining Company Emergency Power System and Paralleling Switchgear; On-Site Project Manager
- Utah Data Center 150 MW Reciprocating Power Plant, Camp Williams Project Manager
- Governmental International Emergency Standby Power System and Paralleling Switchgear; Commissioning and Start up

UMPA Provo Power Plant

April 21, 2017

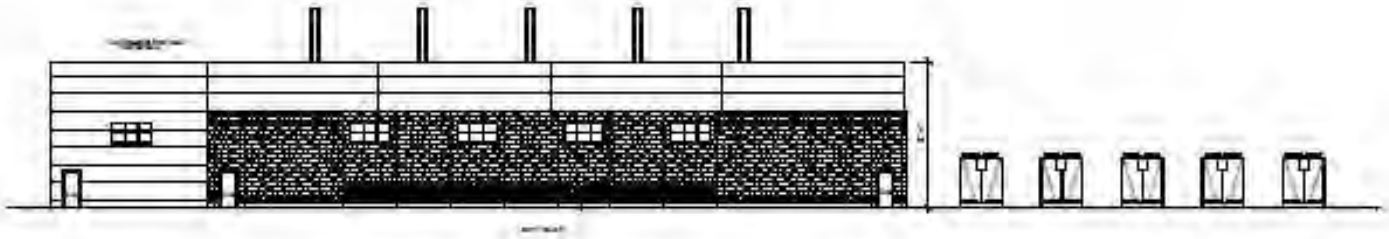
UTAH MUNICIPAL POWER AGENCY

Provo Power Plant

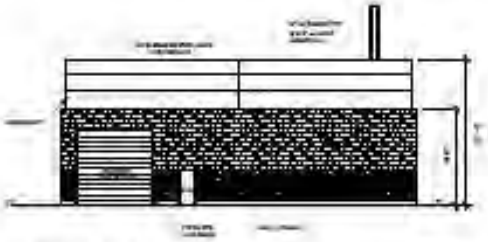
BUILT FOR IT.™

Wheeler Power Systems CAT

- Wheeler Power Systems - Project Developer
  - Hoskins Construction - General Contractor
  - Wasatch Electric - Electrical Contractor
  - Hawker Enterprise – Excavation
  - Scott Benson Construction - Concrete

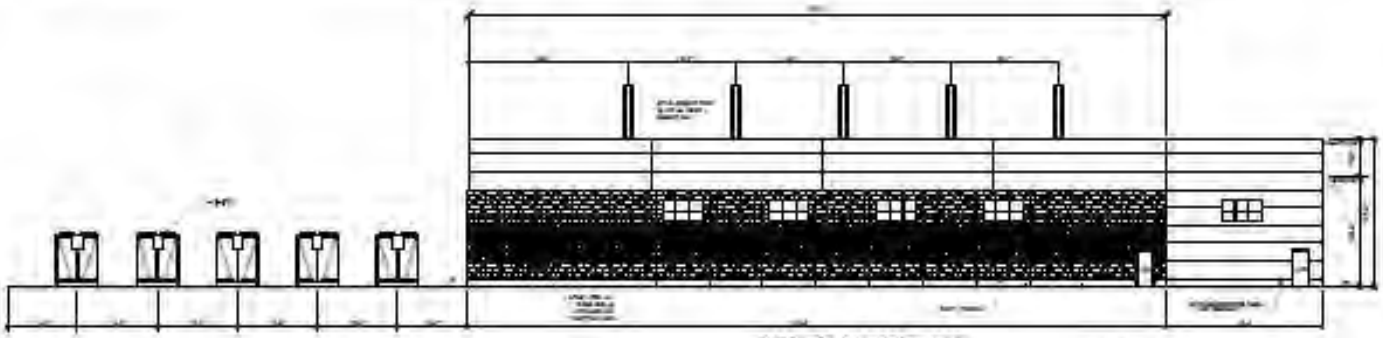


NORTH ELEVATION



WEST ELEVATION

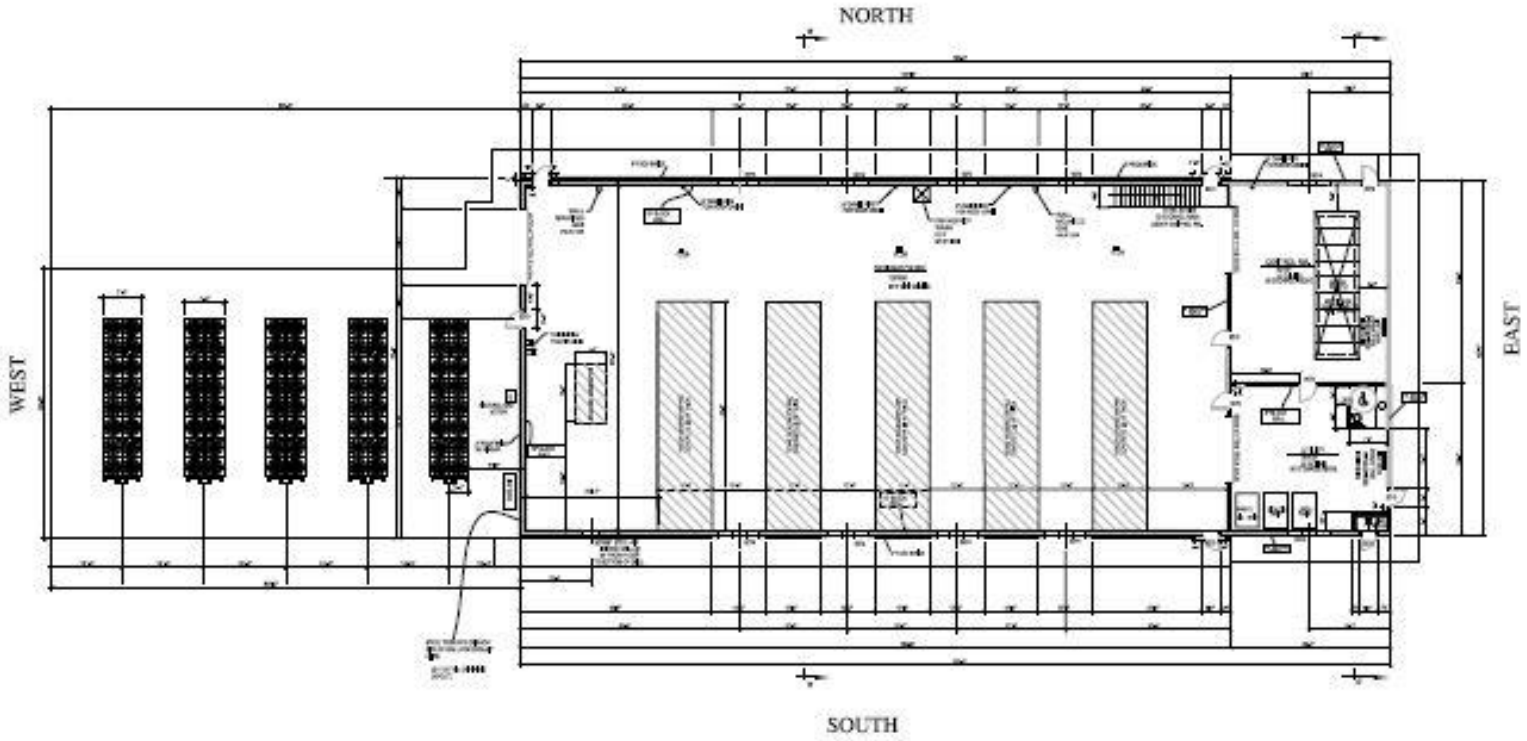
EAST ELEVATION



SOUTH ELEVATION

Wheeler Power Systems CAT

BUILT FOR IT.™



Wheeler Power Systems CAT

BUILT FOR IT.™

BUILT FOR IT.™

Wheeler Power Systems CAT

BUILT FOR IT.™

Wheeler Power Systems CAT

What goes into a Power Plant?

BUILT FOR IT.™

Wheeler Power Systems CAT

Excavation Import and Export

- Over excavated 8-10 feet
- Exported 2145 tons of material

Excavation Import and Export

- Imported 1704 tons of engineered fill

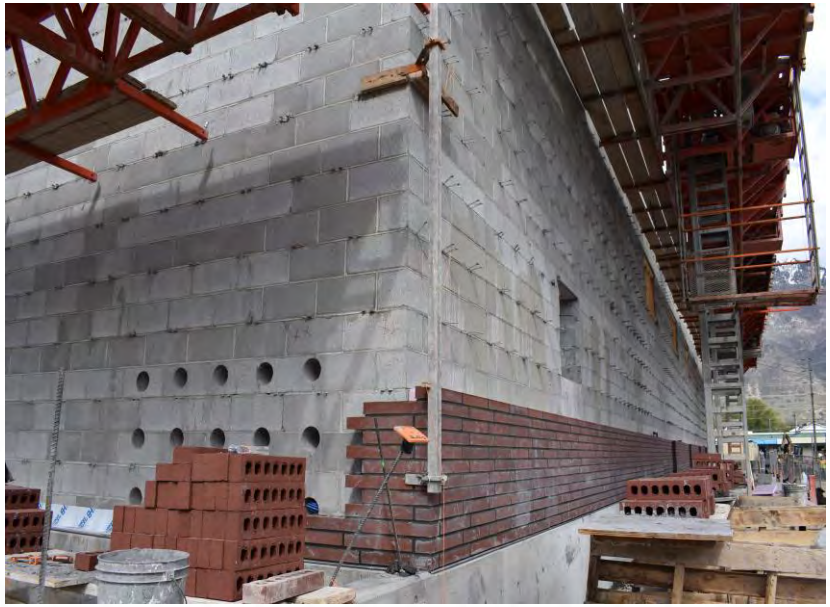
Floors and Footings

- 40,885 lbs of rebar in footings and floors

Floors and Footings

- 490 Yards of Concrete

Walls

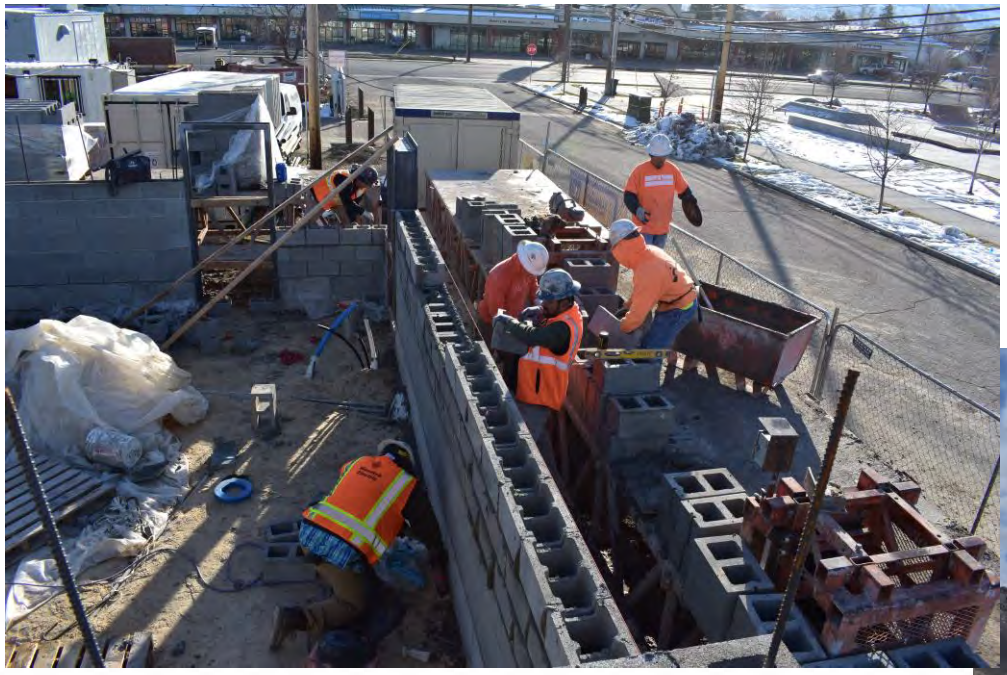


- 14,541 Cinder Block
- 20,986 Brick

BUILT FOR IT.™

Wheeler Power Systems CAT

Walls



- 46,328 lbs of Rebar
- 185 yards of grout

Architectural Steel

- 105,889 Lbs of steel. This includes trusses, bollards, handrail, mezzanine.

Architectural Steel

- 6800 Sq Feet of Architectural steel from Norda
- This will help the plant blend in to the new existing buildings around. The Provo Rec center and the new Power Dept Office and shop.

Cooling System

- 5 64 gallon Aftercooler radiators
- 5 144 gallon Jacket water radiators

BUILT FOR IT.

Cooling System

Wheeler Power Systems CAT

- 2190 ft of 4 inch schedule 40 pipe
- 3725 gallons of anti freeze

BUILT FOR IT.

Electrical

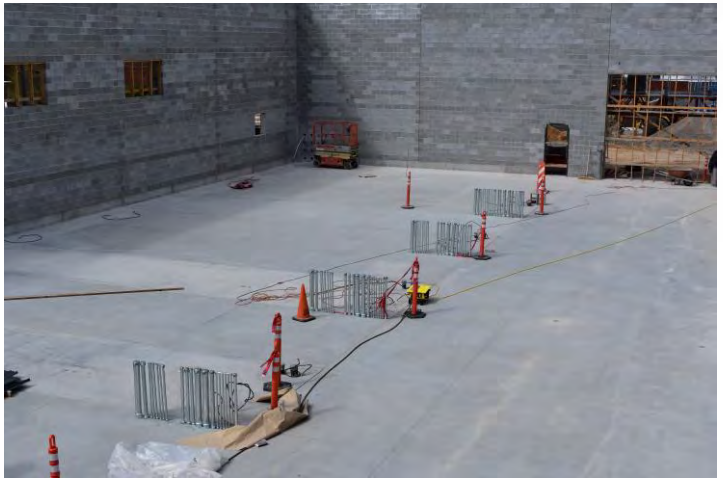
Wheeler Power Systems CAT

- 21,748 feet of conduit
- 36,835 feet of ground wire including grid
- 104,905 feet of wire in conduit

BUILT FOR IT.™

Wheeler Power Systems CAT

Electrical



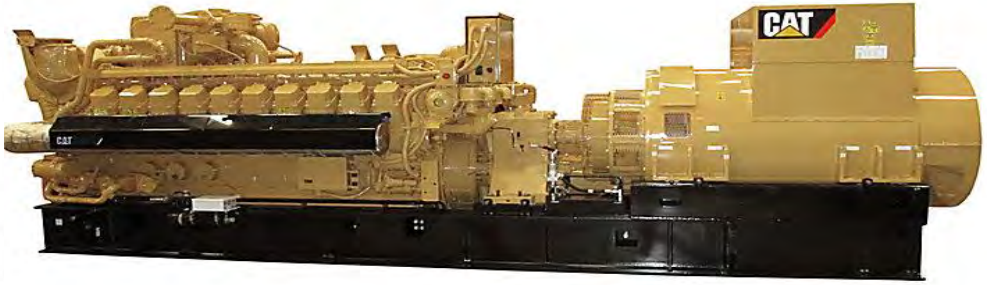
- 5 Distribution Panels
- 1 Motor Control Center (MCC)

Electrical

- 5 Upblaster (Exhaust fans)
- 5 Air Handlers (Swamp Coolers)
- 2 Transformers
- 21 pieces of misc electrical gear

Engines and Generators

- 5 - G3520H
  - 2458 ekw
  - 3410 bhp
- 280,515 lbs of steel and copper
- Total
  - 12,290 ekw
  - 17050 bhp



BUILT FOR IT.

Wheeler Power Systems CAT

Emissions

- 5 **Selective Catalytic Reduction** (**SCR**)
- This allows 92 percent less emissions which allows 8760 hours of run time in a year

Wheeler Power Systems CAT

BUILT FOR IT.™

BUILT FOR IT.™

Wheeler Power Systems CAT

Do you have any questions or comments?

COME TOGETHER
FOR ANOTHER 50 YEARS

LEVAN MANTI NEPHI PROVO SALEM SPANISH FORK

36th ANNUAL REPORT

2016

CONTENTS

Mission & Objectives 1

Managers Report 2

Agency Statistics 6

Member Statistics 8

Power Generation Resources 10

Financial Information 12

NOTABLES:

- Amended Agency and Member Agreements
- West Valley Power Plant Acquisition
- New Provo Plant - 12.5 MW
- New UMPA Office Building
- Rate Stabilization and Reserve Fund Policy

UMPA MISSION

Utah Municipal Power Agency (UMPA), is a consumer owned corporation, established in 1980 with a mission to: “Develop a reliable and economic power supply program to meet the all-requirements electric power and energy needs of its member municipalities”. UMPA’s current member municipalities are: Levan, Manti, Nephi, Provo, Salem, and Spanish Fork.

UMPA is a Joint Action Agency whose services include: generation asset development, transmission services, energy markets transactions, project financing, legislative action, regulatory compliance, legal and engineering support, and energy efficiency and renewable programs.

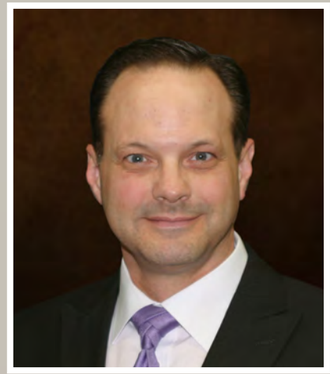
The Agency is governed by a six-member Board of Directors consisting of the Mayor or an elected official of each of the Members. In addition, each member appoints one person, typically the Energy Director from each member city, to the Technical Committee. The Technical Committee meets monthly or as needed to project future load growth, review technical studies, examine power supply alternatives, develop joint operating efforts, and make recommendation to the Board of Directors and Agency staff.

UMPA OBJECTIVES:

1. **To develop a reliable and economic power supply program to meet the electric power and energy needs as required by the members and their customers.**
2. **To provide the benefits of economies of scale through joint endeavors relating to the generation, transmission, and distribution of electric power and energy.**
3. **To involve each member in the planning, operating and developing stages undertaken by the Agency.**

MANAGERS REPORT

Fiscal year 2016 was conceivably the greatest period of Agency accomplishments since 1985 when UMPA's members signed power sales agreements and the Bonanza resource was acquired. Over the past few years, UMPA's members have addressed some difficult issues. Our primary challenges were to address and find solutions for our near future shortage of peaking resources and the expiration of the original member power sales agreements, which were set to expire within 10 years in 2025. These issues could have divided UMPA's members, but instead they brought us together. Through many face-to-face meetings, honest discussions and genuine listening, the members found compromises when needed and solved problems in a collaborative way that is far too uncommon in today's political environment.



LAYNE BURNINGHAM

Chief Operating Officer
General Manager

Amended Agency and Member Agreements

Paramount to the continued future and success of our members' joint action relationship was to collaborate and endeavor to extend, and renew, their association. It was a time to reflect and contemplate the value of UMPA to their individual public power utilities and to their communities and customers. This was a necessary undertaking for several reasons. First, with the Agency's contractual obligations to members ending in 10 years, our long-term planning horizon, the options to be considered, and the decisions that would be made would be considerably different. Second, any long-term financing necessary for acquiring generating assets would not be possible. Third, if UMPA were to be dissolved, the members would need to determine their individual course and begin planning for their respective utilities power resources beyond 2025.

To their credit, UMPA's members decided to extend the life of the Agency and amend their respective power sales agreements. The amended agreements included the following: 1) The Interlocal Agreement extended the existence of the Agency 50 years and was updated to reflect changes in state and federal law. It also granted additional powers to the Agency as an Energy Services Interlocal Entity under Utah code, 2) Power Sales Agreements were extended 50 years and were modified to allow individual member distributed generation in limited quantities, and 3) Capacity Purchase Agreements, whereby member owned generation is dedicated to the Agency, were extended to match the other agreements. The amended agreements became effective on January 1, 2016 and will terminate on December 31, 2065.

West Valley Power Plant Acquisition

After a lengthy power supply needs analysis, a power resource options investigation, and asset purchase negotiations, the Agency acquired the West Valley Power Plant in Utah – a 217 MW simple cycle, natural gas peaking resource consisting of five GE LM6000 units. This acquisition will meet UMPA's peaking resource needs for the foreseeable future and will enhance our ability to integrate intermittent renewable resources into our resource portfolio. An asset purchase agreement was approved by UMPA's Board of Directors in April, 2016 and the transaction closed August 1, 2016 after approval by the Federal Energy Regulatory Commission.

New Provo Plant

The "old" Provo Plant, a member dedicated resource, consisted of four reciprocating engines with a total of 10 MW of capacity. The plant was utilized for peaking power purposes and managing transmission costs of the Agency. It was also the location of the Agency's operations and scheduling center staff. The facility was originally a coal fired generating plant built in 1940. Due to aging infrastructure, maintenance, and seismic concerns, member Provo City made the decision to demolish the plant in conjunction with a complete renovation of the Provo City Power campus. Due to the unique role this facility provided in our resource mix, UMPA's Board of Directors approved a construction agreement with Wheeler Power Systems to build a new power generation plant at the same location. The Agency's new 12 MW plant will consist of five Caterpillar natural gas engines equipped with best available control technology for low emissions. The plant will be operated to achieve the benefits of the decommissioned plant and can provide peaking capacity below the operating minimums of a single unit at the West Valley Plant.

New UMPA Office Building

Due to the need to relocate UMPA's operating and scheduling center staff because of the retirement of the old Provo Plant, and the lack of sufficient space in our current administrative office, it afforded the Agency the opportunity to combine all of our staff and functions into a single, centralized location and, further, promote more efficient operations. After exploring several options, the Board approved a new location and the construction a new office building. The building is anticipated to be complete in April, 2017 and was designed for serving the Agency's needs for the next 50 years.

Rate Stabilization and Reserve Fund Policy

Fiscal year 2016 marks the second year of a defined and budgeted contribution to the Agency's rate stabilization fund. In May, 2016 UMPA's Board of Directors formalized an Agency policy that is designed to promote long-term financial security by setting reserve target levels at an appropriate amount of cash reserves and a plan to attain and maintain the required reserves. The policy will provide greater rate stability for our members and provide flexibility when confronted with unforeseen expenses or capital needs. The target level of the rate stabilization fund, combined with other working capital accounts and funds, is 120 days of operating expenses. The budgeted, defined contribution for FY16 was $1,470,249. Further, as provided for in the policy, the Board elected to contribute additional funds at year-end of $747,176 as member's wholesale power rates from UMPA were 3.8% under budget. The additional contribution augmented the annual defined total by 51%.

Forward Horizon

UMPA has future resource needs due to expiring power supply contracts and continued growth within our member cities. As we further refine our power needs and type, we remain focused on our mandate to develop a reliable and economic power supply program to meet the obligations of our members.

Consumer interest in renewable energy, particularly solar, continues to grow. Not every customer that is interested in solar is able to install a roof-top system. For some, the installation cost is too high. For others, they don't own a single-family home or their roof is not ideally suited or capable of supporting solar panels.

As an alternative to rooftop solar projects, utilities are analyzing and investing in utility-scale solar projects. This is where multiple entities, including utilities and their customers, work together to fund a large, utility-scale solar installation and share the electricity output. A benefit to this arrangement is providing a solar option for customers who otherwise couldn't do it themselves. In addition, a larger utility-scale solar project is more cost effective, produces more energy per installed kW, and are better integrated with the utility grid.

UMPA has begun the investigation of a utility-scale solar projects for our members. Solar power can and should be part of our energy portfolio. UMPA's member cities are working on ways to provide a cost-effective option for customers that addresses the limitations of rooftop systems.

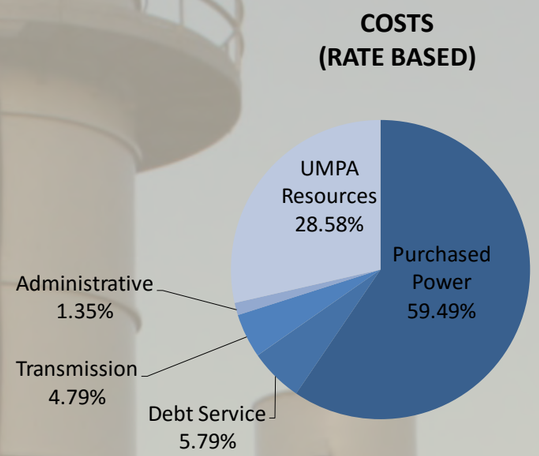
By most measures, fiscal year 2016 was an active and successful year for the Agency and our members that we serve. We have worked through tough decisions, and the results speak for themselves. Our plan is working, because we are working together. That is the benefit of public power. It works.

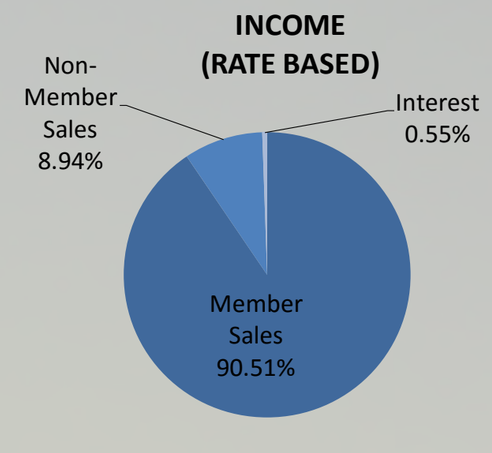
AGENCY STATISTICS

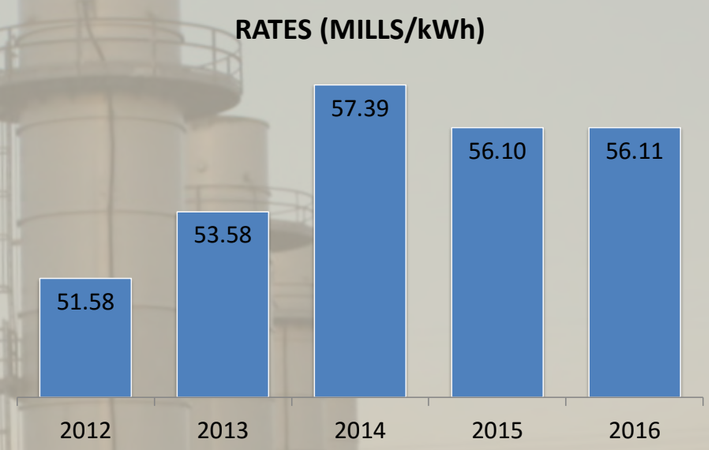
FIVE-YEAR FINANCIAL & OPERATIONAL REVIEW

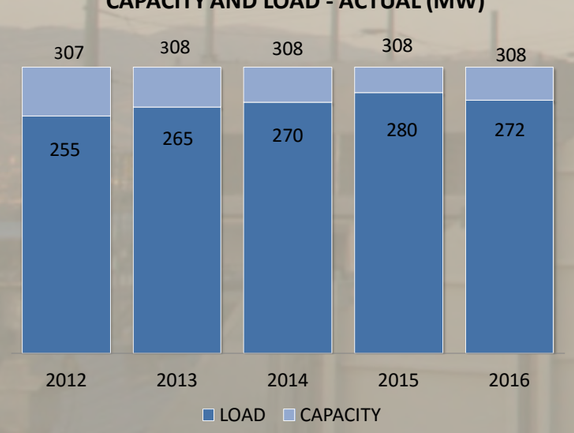
	2012	2013	2014	2015	2016
FINANCIAL DATA					
Total operating revenues	$68,159,908	$71,881,005	$78,043,999	$74,122,387	$75,550,012
Total operating expenses	64,512,428	66,087,280	75,363,192	64,474,080	66,907,491
Income (loss) from Operations	3,647,480	5,793,725	2,680,807	9,648,307	8,642,521
Utility plant and equipment	13,935,319	15,294,925	17,813,717	17,024,686	15,323,957
Current assets	27,961,617	33,991,041	31,686,338	36,398,080	39,470,422
Long-term liabilities	21,707,607	25,110,316	21,757,752	16,046,010	9,422,385
Current liabilities	9,518,833	8,550,604	10,281,957	11,707,806	12,628,200
Rate Stabilization Fund Balance	1,607,654	2,591,684	2,925,132	4,647,533	6,904,349
Debt Service Coverage	1.18	1.65	1.00	1.54	1.36

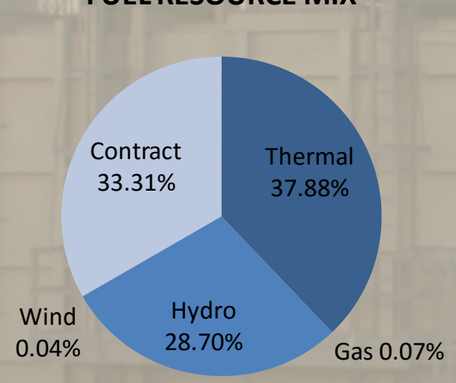
	2012	2013	2014	2015	2016
STATISTICAL DATA					
Total member energy sales (kWh)	1,170,595,819	1,215,555,322	1,215,420,469	1,216,810,127	1,225,207,746
Total non-member energy sales (kWh)	135,459,532	101,363,636	143,190,270	133,589,164	139,030,557
Member Peak demand (kW)	254,843	264,667	270,298	279,987	271,911
Energy growth rate - member	1.31%	3.84%	(0.01)%	0.11%	0.69%
Billed capacity growth rate - member	27.46%	28.24%	(5.96)%	(3.02)%	13.41%

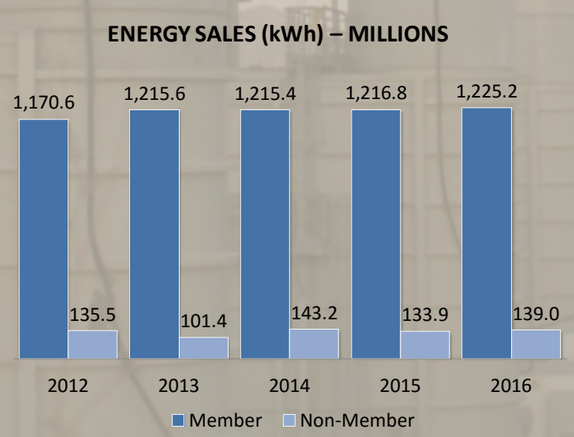


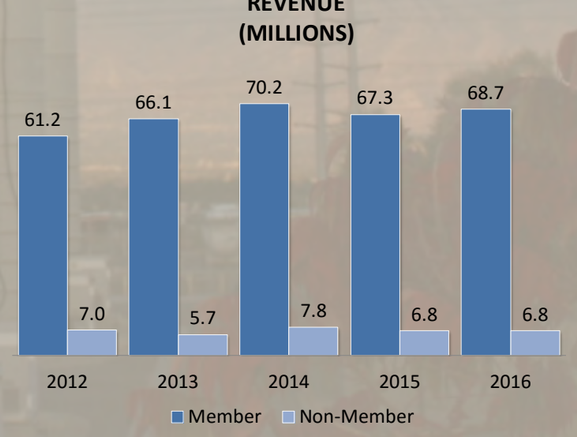




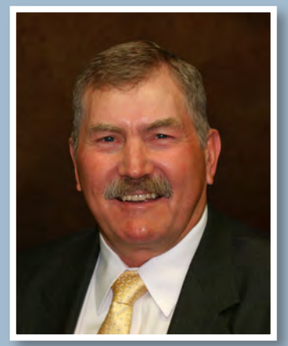




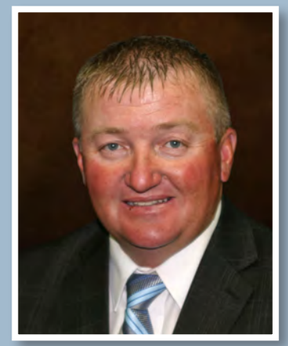




MEMBER STATISTICS



RUSSELL MANGELSON
UMPA Director
Levan Town Mayor



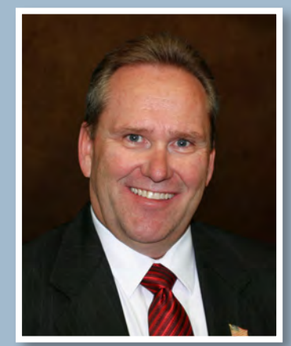
JASON WORWOOD
UMPA Technical Committee
Levan Power Superintendent

LEVAN TOWN

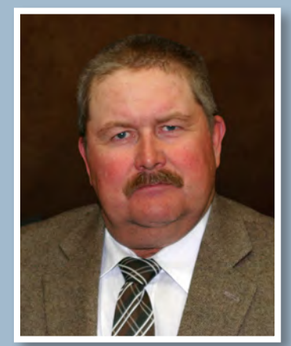
Population: 855
Number of Customers: 330
Energy Consumption (kWh): 4,994,456
Peak Demand (kW): 1,205
Peak Date: July 3, 2015 @ 1800 hrs.
Energy Growth Rate: (1.06)%
Capacity Growth Rate: (3.21)%

MANTI CITY

Population: 3,289
Number of Customers: 1,387
Energy Consumption (kWh): 21,296,679
Peak Demand (kW): 4,289
Peak Date: June 23, 2016 @ 1800 hrs.
Energy Growth Rate: (1.38)%
Capacity Growth Rate: 4.39%



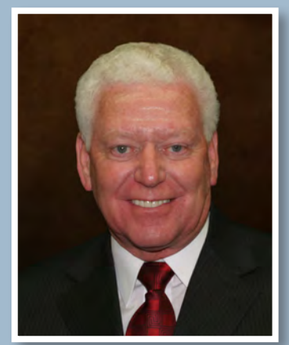
KORRY SOPER
UMPA Director
Manti City Mayor



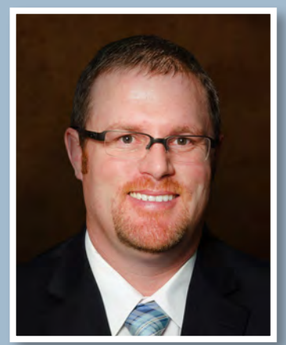
BLAKE DEMILL
UMPA Technical Committee Vice Chair
Manti Power Superintendent

NEPHI CITY

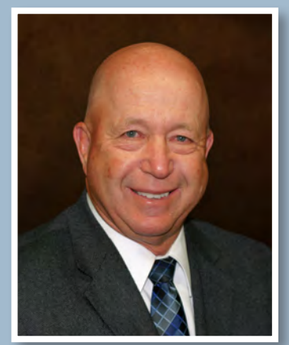
Population: 5,830
Number of Customers: 2,287
Energy Consumption (kWh): 99,884,683
Peak Demand (kW): 17,183
Peak Date: July 2, 2015 @ 1330 hrs.
Energy Growth Rate: 0.51%
Capacity Growth Rate: (3.40)%



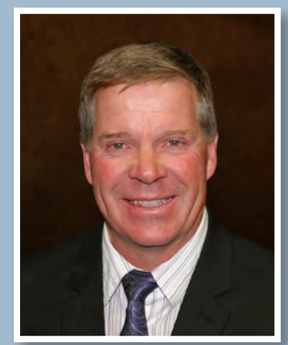
MARK JONES
UMPA Secretary-Treasurer
Nephi City Mayor



RUST FINLINSON
UMPA Technical Committee
Nephi Electric Divsion Ops Manager



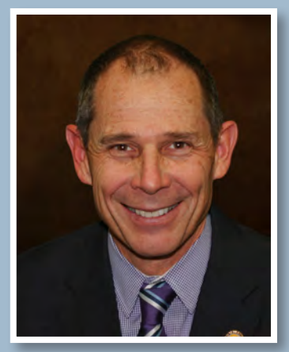
STERLING REES
UMPA Vice Chair
Salem City Council



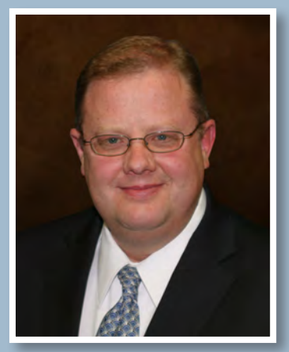
CLARK CROOK
UMPA Technical Committee
Salem Power Superintendent

SALEM CITY

Population: 7,330
Number of Customers: 2,398
Energy Consumption (kWh): 36,969,752
Peak Demand (kW): 10,240
Peak Date: July 27, 2016 @ 1800 hrs.
Energy Growth Rate: 5.70%
Capacity Growth Rate: 2.36%



JOHN CURTIS
UMPA Chair
Provo City Mayor



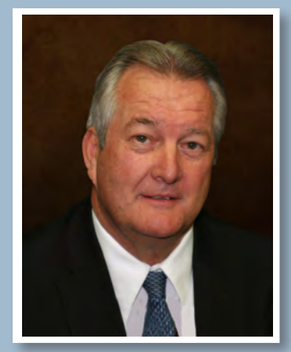
TRAVIS BALL
UMPA Technical Committee Chair
Provo Energy Director

PROVO CITY

Population: 114,801
Number of Customers: 36,204
Energy Consumption (kWh): 800,443,152
Peak Demand (kW): 179,158
Peak Date: July 1, 2015 @ 1700 hrs.
Energy Growth Rate: (0.73)%
Capacity Growth Rate: (2.09)%

SPANISH FORK CITY

Population: 38,030
Number of Customers: 11,657
Energy Consumption (kWh): 261,619,024
Peak Demand (kW): 62,173
Peak Date: June 20, 2016 @ 1800 hrs.
Energy Growth Rate: 4.37%
Capacity Growth Rate: (2.26)%



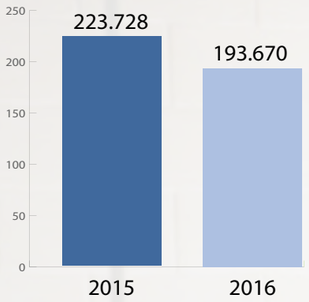
STEVE LEIFSON
UMPA Director
Spanish Fork City Mayor

KELLY PETERSON
UMPA Technical Committee Spanish Fork Power Superintendent

PacifiCorp Firm

Capacity - kW	75,000
Resource type	Load following
Resource interest	Firm contracts
kWh output, 2015	223,728,000
kWh output, 2016	193,670,000
Percent change	(13.44)%
Percent of 2016	18.28%

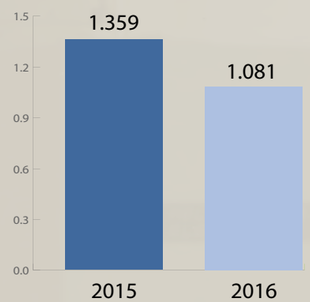
Millions Kilowatt Hours



Nephi Hydros

Capacity - kW	900
Resource type	Run of river
Resource interest	100% Dedicated
Fuel type	Hydro
kWh output, 2015	1,358,951
kWh output, 2016	1,081,213
Percent change	(20.44)%
Percent of 2016	0.10%

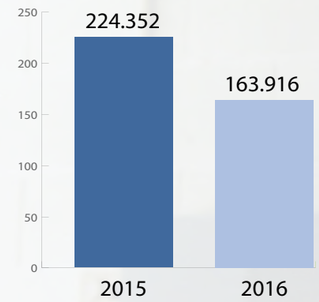
Millions Kilowatt Hours



Hunter Unit 1 Plant

Capacity - kW	430,000
Resource type	Load following
Resource interest	6.25% Dedicated
Fuel Type	Coal
kWh output, 2015	224,352,000
kWh output, 2016	163,916,000
Percent change	(26.94)%
Percent of 2016	15.47%

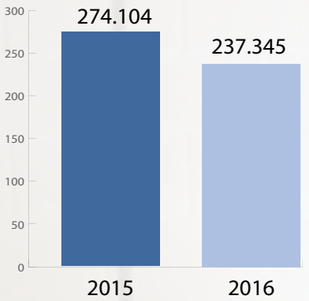
Millions Kilowatt Hours



Bonanza Unit 1 Plant

Capacity - kW	458,000
Resource type	Load following
Resource int-owned	3.75%
Resource int-contract	3.50%
Fuel type	Coal
kWh output, 2015	274,104,000
kWh output, 2016	237,345,000
Percent change	(13.41)%
Percent of 2016	22.40%

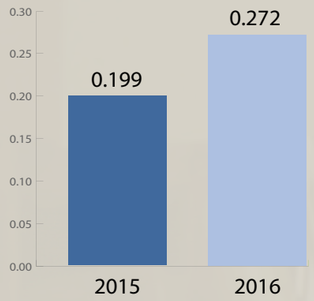
Millions Kilowatt Hours



Levan Hydros

Capacity - kW	320
Resource type	Run of river
Resource interest	100% Dedicated
Fuel type	Hydro
kWh output, 2015	199,026
kWh output, 2016	272,384
Percent change	36.86%
Percent of 2016	0.03%

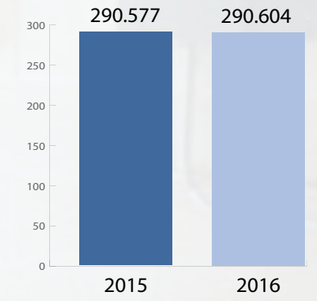
Millions Kilowatt Hours



CRSP

apacity - kW	87,016
Resource type	Load following
Resource interest	Firm contract
Fuel type	Hydro
kWh output, 2015	290,576,708
kWh output, 2016	290,603,524
Percent change	0.01%
Percent of 2016	27.43%

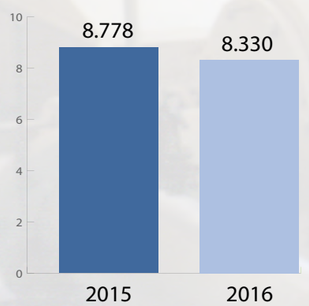
Millions Kilowatt Hours



Deer Creek

Capacity - kW	4,000
Resource type	Intermediate
Resource interest	Contract
Fuel type	Hydro
kWh output, 2015	8,778,000
kWh output, 2016	8,330,000
Percent change	(5.10)%
Percent of 2016	0.79%

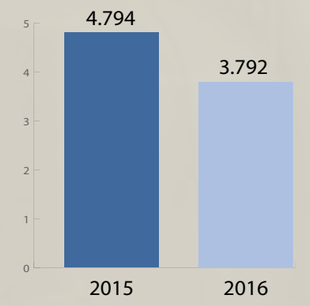
Millions Kilowatt Hours



Manti Hydros

Capacity - kW	2,200
Resource type	Run of river
Resource interest	100% Dedicated
Fuel type	Hydro
kWh output, 2015	4,794,190
kWh output, 2016	3,792,007
Percent change	(20.90)%
Percent of 2016	0.36%

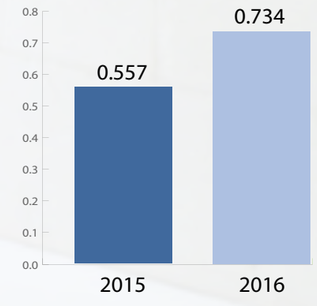
Millions Kilowatt Hours



Provo Plant

Capacity - kW	20,110
Resource type	Peaking & reserves
Resource interest	100% Dedicated
Fuel type	Gas
kWh output, 2015	557,167
kWh output, 2016	733,992
Percent change	31.74%
Percent of 2016	0.07%

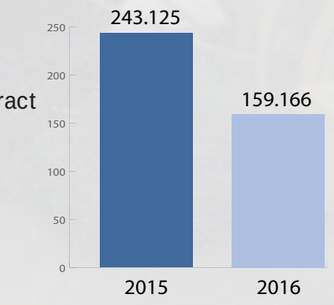
Millions Kilowatt Hours



DG&T Contract

Capacity - kW	80,000
Resource type	Load following
Resource interest	Contingent contract
kWh output, 2015	243,125,000
kWh output, 2016	159,166,000
Percent change	(34.53)%
Percent of 2016	15.02%

Millions Kilowatt Hours



GENERATION RESOURCES

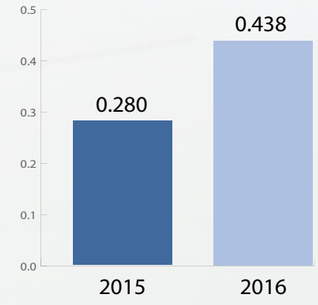
10

11

Wind Project

Capacity - kW	11
Resource type	Base load
Resource interest	Test Project
kWh output, 2015	208,044
kWh output, 2016	437,649
Percent change	56.28%
Percent of 2016	0.04%

Millions Kilowatt Hours



2016 Financial Statements can be viewed on our website:

www.umpa.cc

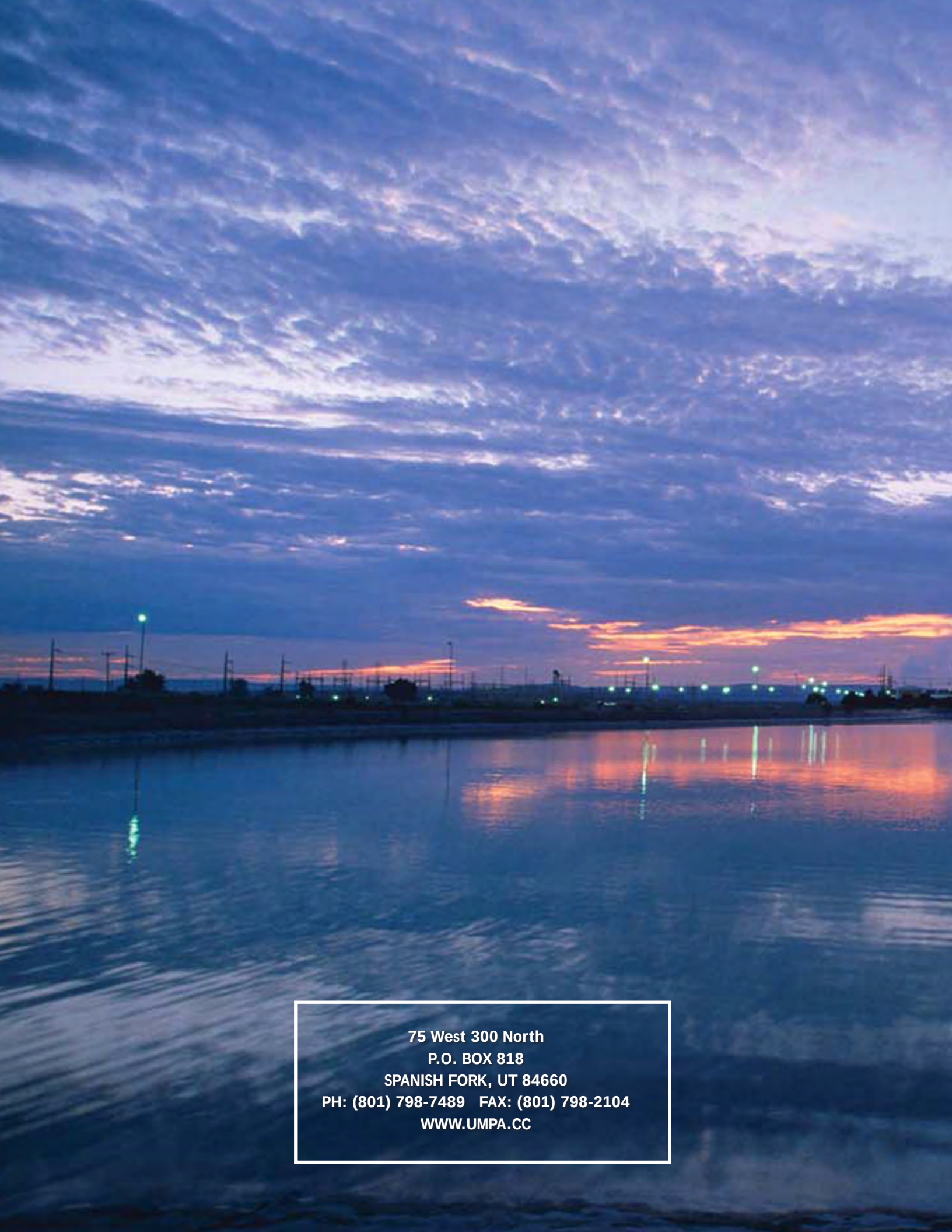
2016 Financial Statements can also be obtained over the phone by calling:

(801) 798-7489

UTAH MUNICIPAL POWER AGENCY

2016 50 2066

Come together for another 50 yrs



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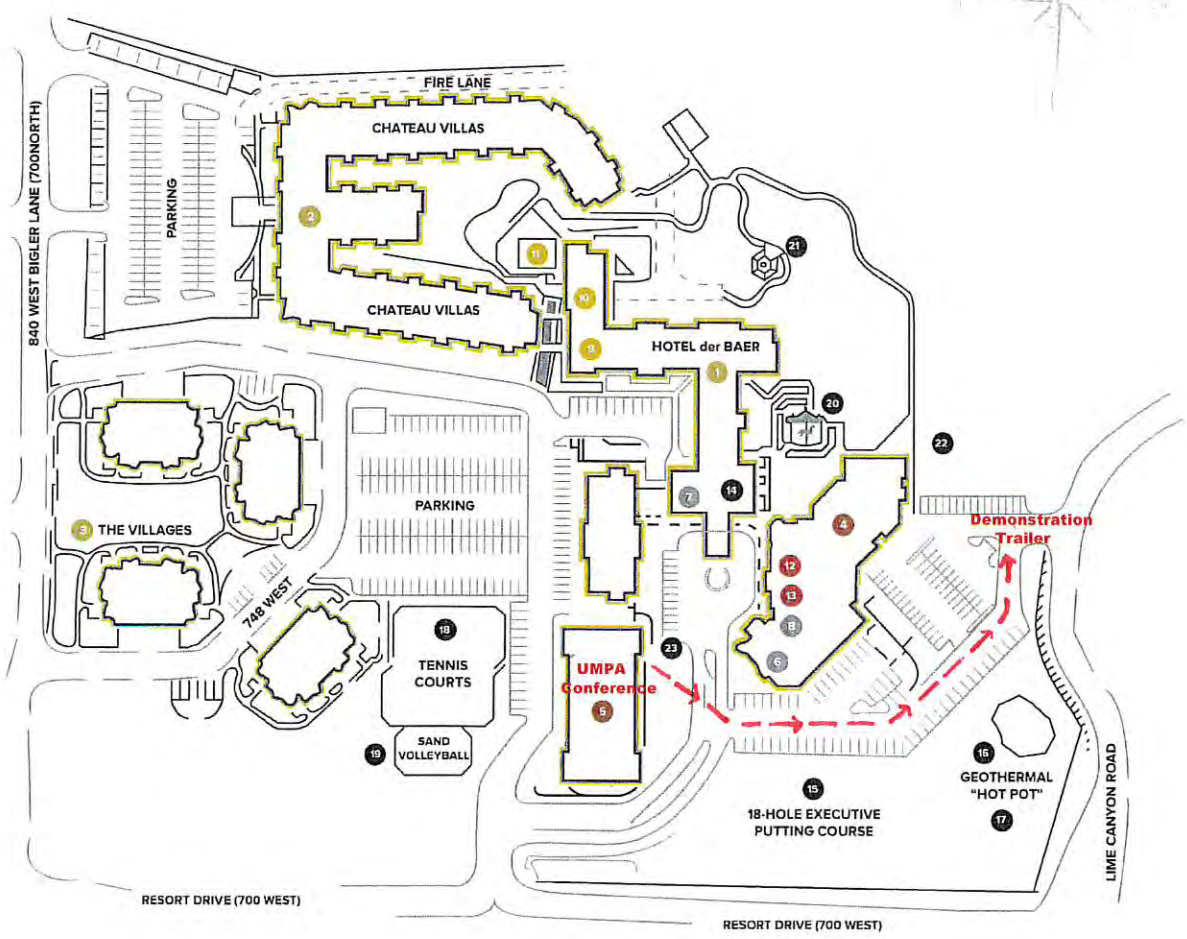
PH: (801) 798-7489 FAX: (801) 798-2104
WWW.UMPA.CC

Zermatt Property



ACOMMODATIONS
1. Hotel der Baer
2. Chateau Villas
3. The Villages

MEETINGS
4. Matterhorn Conference Center
5. Bernese Event Center

RESTAURANTS
6. Z's Steak & Chop Haus
7. Wildfire Smokehaus
8. *the* Bakery at Zermatt

SPA & FITNESS
9. *the* Spa at Zermatt
10. Wellness Center
11. Pool's

RETAIL & SHOPS
12. Adventure Haus
13. Fly Fishing / Gift Shop

AMENITIES
14. Chalet Lounge
15. Executive Putting Course
16. Geothermal "Hot Pot"
17. Beach
18. Tennis Courts
19. Sand Volleyball
20. Carousel
21. Gazebo
22. Horse Shoe Pit
23. Plaza Games (Outdoor Chess & Shuffle Board)