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June 4, 2013

MEMORANDUM

TO: Council Members

FROM: Charlie Grist and Brian Dekiep

SUBJECT: Presentation on implementation of Energy Efficiency in Montana

This briefing is part of a series of presentations on how energy efficiency is implemented by various entities around the Northwest. At the May meeting in Boardman Oregon, Council members heard from Margie Harris from Energy Trust of Oregon and Steve Eldridge from the Umatilla Electric Cooperative. This month we will hear from the largest private and public utilities in Montana. Northwestern Energy is an investor-owned utility which serves customers across Montana and in South Dakota and Nebraska. Flathead Electric Cooperative is the state's largest publicly-owned utility.

Deb Young is with Northwestern Energy's Regulatory Support Services. This past May, Ms. Young accepted the exemplary program award from the American Council for an Energy-Efficient Economy (ACEEE) on behalf of Northwestern and its Energy E+ Business Partners program. Ms. Young has also been on the board of the Northwest Energy Efficiency Alliance since 1997 and she is currently the vice chair. Northwestern has recently completed an evaluation of its energy efficiency program activities covering the last five years. Northwestern Energy serves 342,000 electric distribution customers in Montana, across 187 communities. In 2011 Northwestern reported annual statewide savings of 7.6 average megawatts on regulated sales of 980 average megawatts.

Additionally, we will hear from Ross Holter who is the Energy Services Supervisor with Flathead Electric Cooperative (FEC) in Northwestern Montana. FEC has recently received top honors from the Bonneville Power Administration for Excellence in Energy Efficiency. Flathead Electric Cooperative (FEC) serves 61,456 customers in Montana. In 2011, Flathead reported annual savings of 2.4 average megawatts on sales of about 150 average megawatts.

We have asked the presenters to touch on the successes and challenges of implementing energy efficiency programs in the region from their unique perspectives.

Biographies of Ross Holter and Deb Young

June 4, 2013

Ross Holter

Ross Holter is currently the Energy Services Supervisor at Flathead Electric Cooperative in Kalispell, Montana. He is responsible for the development and administration of residential and commercial energy efficiency programs. Ross is a graduate of the University of Montana school of Business Administration and has had a varied career over the years including logging, radio station management, and construction sales prior to arriving at Flathead Electric in 1999.

Ross enjoys the Montana lifestyle including hunting, fishing, boating on Flathead Lake and various construction projects.

Deb Young

Deb Martin Young has been working for the utility in Butte, MT since 1983. She began her career in the corporate communications department of the Montana Power Company where she gained broad knowledge of the electric and natural gas utility industries. For the past 25 years, Young has been actively engaged in the development, implementation, and evaluation of energy efficiency, renewable energy, low income, electricity and natural gas marketing and customer education initiatives. She has served as an expert witness in utility rate proceedings and in legislative activities.

Young has organized utility advisory groups made up of public interest representatives, consumers, government and regulatory representatives, and has served as the utility's primary representative for those groups.

Since 1997, Young has served as NorthWestern Energy's (formerly Montana Power) representative on the board of the Northwest Energy Efficiency Alliance (NEEA) and is a local champion for NEEA initiatives in Montana and of rural/small market customers in the region. Most often, Young is a voice on the phone during regional energy efficiency calls, participating from her desk in Beautiful Butte America, Montana. Young is currently Vice Chair of the NEEA Board and chairs its Strategic Planning Committee.

Young grew up in Eastern Montana and received her Bachelor of Arts degree in General Business and Communication Arts—Mass Communications option from Montana State University, Billings.

Northwest Power and Conservation Council

Missoula, Montana

Wednesday, June 12, 2013

Presented by:

Ross Holter

**Energy Services Supervisor
Flathead Electric Cooperative**



Flathead Electric Cooperative



Main Service Area in N.W. Montana

September 2010

Flathead Electric Co-op Snapshot: 2012

Members - 48,620

Meters - 61,620

Employees - 155

Peak Load – 277 Mw

Average Load - 161 Mw

New Services - 531

Today's Topics:

- **New Rate Structure**
- **Demand Response Pilot**
- **General EE Plan of attack**
- **New Programs**
- **Challenges and issues moving forward.**

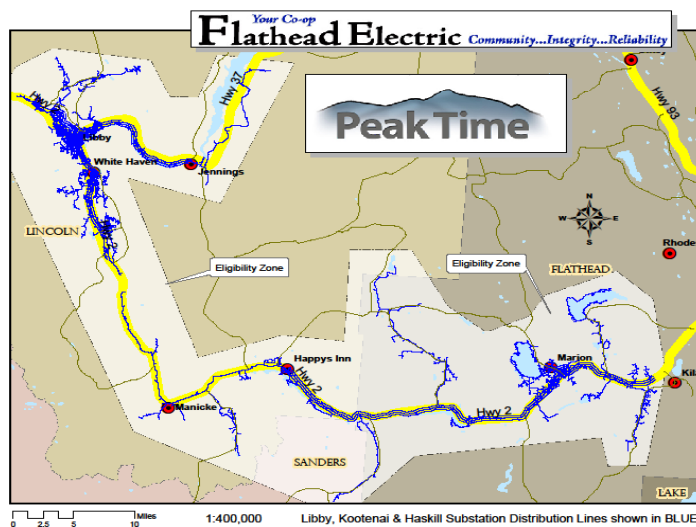
New Rate Structure

- **Designed to:**

- Collect costs from those who create them.
- Provide incentive for energy efficiency.
- Cover fixed costs from fixed charge. (alleviates risk)

Residential:	Old <small>(June 2010)</small>	New
Basic Charge	\$16.00	\$22.13
kWh charge	\$.057 for all	\$.05714 1 st 600 kWh \$.07028 601 to 3,500 \$.10261 3,501 and up

Demonstration Project Area





Summary of FEC Asset Systems and Test Cases:

Volunteer Option #1

- Provide members with an In-Home Display (IHD)
 - The IHD is configured to respond to over-power line communications broadcast from the integrated AMI system for human-in-the loop demand response.



Volunteer Option #2

- Water Heater Demand Response Unit (DRU)
 - Traditional DR technology over power line allows members to have their hot water heater operated by the co-op in response to peak demands.



Volunteer Option #3

- Implement Home Energy Network with Smart Appliances for advanced control with GE Nucleus / Profile Brillion enabled Home Energy Network and
 - Load control-enabled dishwasher
 - Load control-enabled clothes washer
 - Load control-enabled clothes dryer
 - one Zigbee Water Heater Switch
 - one Energy Display



Summary of FEC Asset Systems & Test Cases in Spirae BlueFin

Not only possible. Proven.

Flathead Electric
Community...Integrity...Reliability
9/13/2012 9:48:57.554 AM

FEC System Overview

BlueFin Control

BlueFin System Disable

Transactive Control Enable

Dispatch Mode Manual Mode

115 KV 230 KV

BPA

12.5 KV 12.5 KV

Libby Substation Haskill Substation

BlueFin status

BlueFin heartbeat 95

Transactive Control Disabled

AMI data collection Process Completed.

BPA data collection Process Completed.

AMI Baseline

In-Home Displays

Water Heaters

Smart Appliances

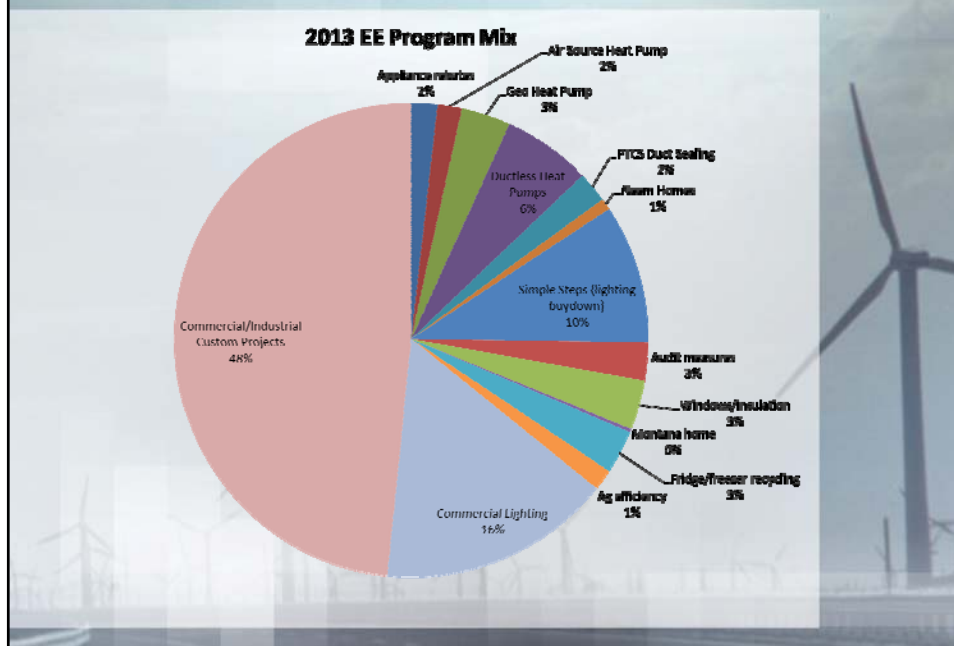
AMI Baseline

In-Home Displays

Water Heaters

Smart Appliances

EE Plan:



Newest Program:

- **Energy Fix Loan Program (2012)**

- On-bill financing for :
 - Ductless Heat Pumps
 - Air Source Heat Pumps
 - Geo Heat Pumps
 - Window Retro-fits
 - Insulation Upgrades

3% interest on max of \$7,500 for 5 years.

Member Comments:

Mr. Bopp was very professional and took the time we needed to understand the loan procedure as well as the savings on a modern heat pump.

My wife and I have talked to friends and told them how happy we are.

This was a perfect opportunity for us to replace our heat pump.

We decided to do all of the windows in our house versus just a portion because of this program.

The loan was a serious consideration (in proceeding).

Didn't know about window or duct sealing programs (until we called)

I stopped by FEC office and talked to a consultant. Very helpful!

Would not have done this without the incentive. Thank you!

Very professional and neat.

Without the upgrade rebates, it is doubtful we would have been able to complete the window upgrade.

We could not afford to do it without you! Thank you so much!

David was very easy to work with and made the entire process very smooth and effortless.

Challenges and Issues:

- 1. Uncertain Funding! (and other BPA issues)**
- 2. Changes/elimination of eligible measures. (and new measures with slow or no uptake.)** Example: HPWH, Wx. Measures.
- 3. Difficulties associated with being rural or “far east”.**

Changes/Elimination of Eligible Measures

- **Ground Source Heat Pumps in jeopardy.**
- **Heat pump water heaters aren't likely to be widely adopted in our area.**
- **Weatherization will be difficult under new proposed specs that require air sealing and possible blower door tests.**

ENERGY EFFICIENCY AT NORTHWESTERN ENERGY

Northwest Power and Conservation Council Missoula, MT June 12, 2013

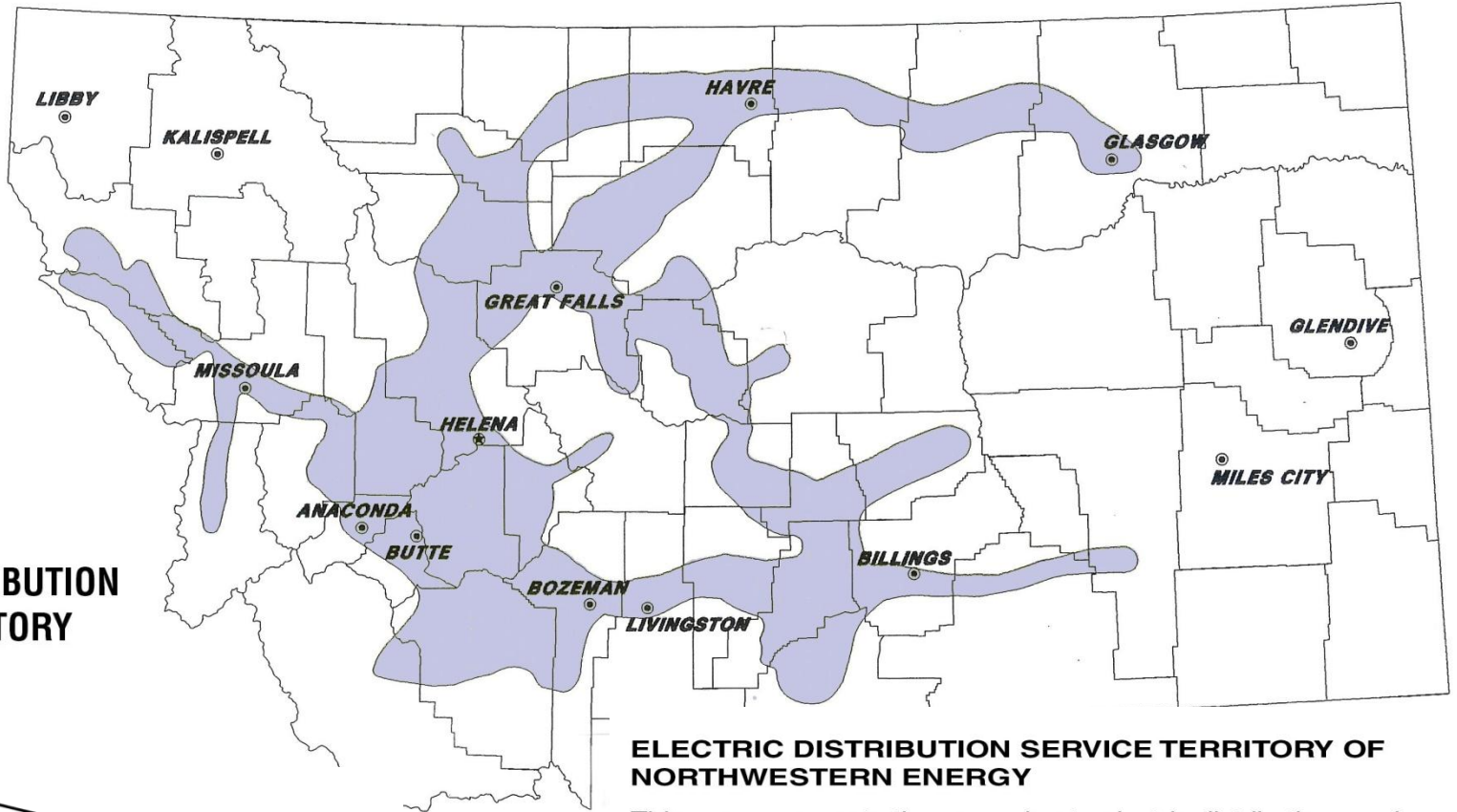


OUTLINE



**About NorthWestern
Energy**
DSM Evaluation
Efficiency Evaluation
Smart Grid Project

NWE MONT. ELECTRIC SERVICE TERRITORY...

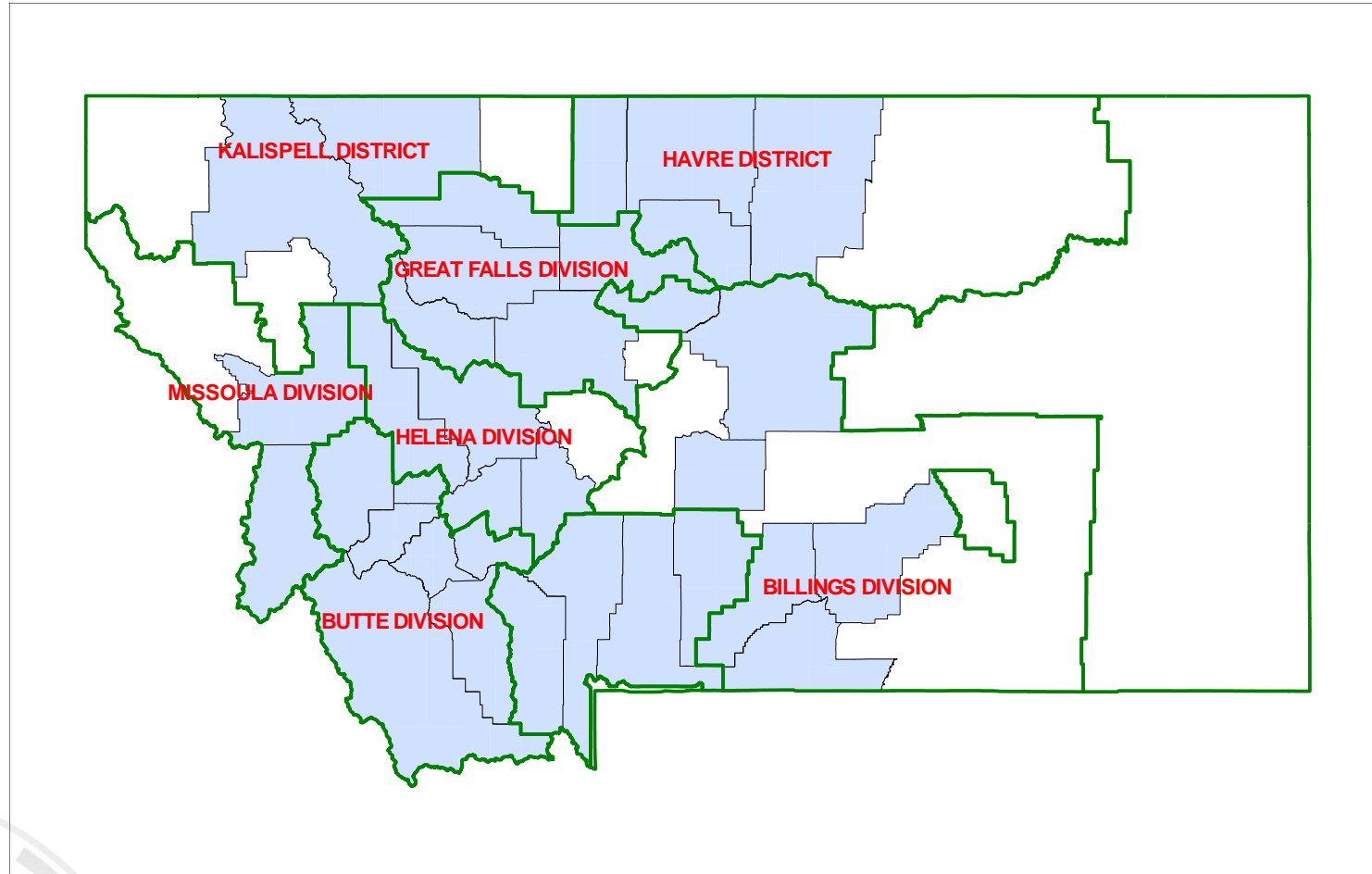


ELECTRIC DISTRIBUTION SERVICE TERRITORY OF NORTHWESTERN ENERGY

This map represents the approximate electric distribution service territory of NorthWestern Energy. NWE serves approximately 68% of the state's population with electricity.

Please Note: There are 15 Rural Electric Cooperatives with service territories (not shown) that intermingle with the service territory of NorthWestern Energy.

NORTHWESTERN ENERGY GAS TERRITORY IN MONTANA



OUTLINE



Evaluation

Summary of Report
Recommendations
Electric Programs
Audit/Appraisal
Renewables

EVALUATION OBJECTIVES

- DSM programs are a least cost resource
- Cost Recovery of DSM costs and lost revenues
 - Requires proof of savings
 - Demonstrate appropriate public purpose of Universal System Benefits (USB) dollars
- Utility needs to demonstrate meeting objectives and acting as good stewards of customer dollars
- Independent 3rd Party evaluation provides
 - Industry accepted methodologies
 - Additional verification of claims and arguments to regulators
 - Burden of proof is on the utility

EVALUATION OBJECTIVES

- Impact
 - Are the savings claims appropriate?
 - Adjust based upon record reviews, site visits, logging studies, industry research
 - Are the activities cost effective?
 - Develop Benefit/Cost ratios

EVALUATION OBJECTIVES

- Process
 - How can performance and participation be improved?
 - Compare to programs across industry
 - Consider market conditions
 - Make recommendations to:
 - Build participation,
 - Control spending,
 - Higher acquisition of savings
 - Improved economics

EVALUATION SCOPE

- Evaluation work conducted from Jan – Oct 2012
- Portfolio of 24 programs (DSM and USB)
- Evaluation covered all program activity from 7-1-2006 thru 12-31-2011
- Standardized program tracking database, covering all programs, all years, >300,000 records
- Samples drawn from the most recent two years of program activity and results applied to the entire period

EVALUATION SCOPE

- NorthWestern reported savings and evaluation adjusted savings (kWh, dkt) and cost-effectiveness evaluated by Calendar and Tracker Year
- 1,416 process evaluation interviews with participants, non-participants, trade allies, and program staff
- Compared with more than 50 program best practices
- Formulated program-specific recommendations for improvements

24 PROGRAMS EVALUATED

- Building Operator Certification
- DEQ Appliance
- E+ Audit Home or Business
- E+ Building Blocks Pilot
- E+ Business Partners
- E+ Commercial Existing Electric Rebate
- E+ Commercial Existing Gas Rebate
- E+ Commercial Lighting
- E+ Commercial New Electric Rebate
- E+ Commercial New Gas Rebate
- E+ Electric Motor/Rewind Rebate
- E+ Free Weatherization/Fuel Switch
- E+ Irrigation
- E+ New Homes
- E+ Renewable
- E+ Residential Existing Electric Rebate
- E+ Residential Existing Gas Rebate
- E+ Residential Lighting
- E+ Residential New Electric Rebate
- E+ Residential New Gas Rebate
- Low Income Appliance
- NEEA Initiatives
- Vending Miser
- Motor Management Training

MULTIPLE COMPONENTS

- E+ Audit Home or Business
 - Home Electric Survey
 - Home On-site Audit
 - Small Business Electric Appraisal
- E+ Commercial Lighting
 - Commercial CFL Direct Install
 - Commercial Lighting Rebate
- E+ Renewable
 - Business Renewable
 - Residential Renewable
- E+ Residential Lighting
 - In-Store Coupon
 - Trade Show
 - Mail-In
 - Mail-Out
 - Residential CFL Direct Install
 - Upstream CFL Buy-down

IMPACT (KWH/DKT) CALENDAR (2007-11)

All Programs			Units	Reported Energy Savings	Evaluation Energy Savings	Net Savings Adjustment Rate
Electric						
	Electric Supply - DSM		kWh	275,073,686	248,463,014	0.90
	Electric - USB		kWh	34,262,001	22,101,125	0.65
	All Programs Electric		kWh	309,335,688	270,564,139	0.87
Natural Gas						
	Natural Gas Supply - DSM		dkt	548,774	343,421	0.63
	Natural Gas - USB		dkt	325,536	233,824	0.72
	All Programs Natural Gas		dkt	874,310	577,245	0.66

COST-EFFECTIVENESS – CALENDAR(2007-11)

All Programs							
			Units	Total Resource Cost B/C Ratio	Program Administrator Cost B/C Ratio	Ratepayer Impact Measure B/C Ratio	Societal Cost B/C Ratio
Electric							
	Electric Supply - DSM		kWh	2.14	3.66	1.81	2.36
	Electric - USB		kWh	0.28	0.52	0.45	0.31
	All Programs Electric		kWh	1.41	2.49	1.46	1.56
Natural Gas							
	Natural Gas Supply - DSM		dkt	1.00	1.46	1.10	1.10
	Natural Gas - USB		dkt	1.77	1.77	1.32	1.95
	All Programs Natural Gas		dkt	1.28	1.60	1.20	1.41

PROCESS FINDING

- Activity Areas
 - Program Planning and Design
 - Management
 - Branding, Marketing, Outreach, and Media Use
 - Quality Control and Data Tracking
 - Evaluation
- Nonparticipant Findings

PROGRAM MANAGEMENT AND ADMINISTRATION

- Program Management and Administration
 - Program staff *extremely* lean compared to 39 program administrators (LBNL study)
 - Efficiency staff supported by Corp Communications, Community Relations
 - Experienced program implementation contractor
 - Frequent communication, collaboration
- Follows more than 12 Best Practices for Management and Administration
 - Program roles, responsibilities clear
 - Processes in place for systematic inspections, verification
 - Program processes simple, assistance available
 - Single-point of contact for participants
 - Uses well-qualified engineering staff for technical programs

BRANDING, MARKETING, OUTREACH, AND MEDIA USE

- **Branding, Website, and Other Services**
 - Careful branding, use of logos
 - Corporate Communications staff are valued members of efficiency team
 - Website evolution; in 2010 efficiency pages reworked with ad agency
- **Marketing and Outreach**
 - Extensive outreach to customers and trade allies through multiple channels
 - Frequently hosting or participating in events, often distributing measures
 - Nonresidential one-on-one and small group outreach
 - Trade allies supported with newsletters, facilitated network, annual meetings
- **Community Relations**
 - NWE's CR managers provide outreach to multiple communities (based in 6 major cities)
 - Discuss efficiency with individual customers and at events
- **Follows More than 8 Best Practices for Marketing and Outreach**
 - Communicates with customers through multiple media
 - Uses website to attract and inform
 - Uses Energy Star products and logo
 - Leverages marketing dollars (trade ally relationships, co-hosting events)
 - Conducts cross program marketing

QUALITY CONTROL & DATA TRACKING

- **Quality Control**
 - Automated and manual checking of application forms, invoices, incentives
 - Audit results reviewed by technical staff
 - Inspections in all programs
- **Follows More than 9 Best Practices for Quality Control**
 - Sample-based post-installation inspections
 - Inspects all large projects and uncertain savings estimates
 - Assesses customer satisfaction
 - Preferred contractors
- **Data Tracking and Reporting**
 - 30 databases, including cross-program databases that interact with other files
 - Databases, purpose, variables are documented
 - All participants checked for eligibility
 - Payments tracked together
 - Consistent reports generated
- **Follows More than 15 Best Practices for Data Tracking and Reporting**
 - Functions – including QC – are automated
 - Databases dynamically linked
 - Algorithms validated
 - Tracking reports used to manage programs

OUTLINE



Summary of Report
Recommendations
Electric Programs
CFL Study
Gas Programs
Audit/Appraisal
Renewables

IMPACT RECOMMENDATIONS

- Impact
 - Increase marketing to make customer more aware of NWE offerings
 - Collect customer e-mail addresses for future evaluations
 - Use consistent program names
 - Update Unit Energy Savings (UES) values

PROCESS RECOMMENDATIONS

- Planning and design
 - Prepare written program plans
 - Reduce the frequency of updates
 - Update customers about program changes
- Management and administrative
 - Write down process plans
 - Solicit program feedback from trade allies
 - Increase use of internet tools
- Marketing and outreach
 - Provide more information about efficiency opportunities through mail
 - Notify participating trade allies by email of all Montana-based efficiency related workshops, seminars, and training opportunities
 - Recruit additional trade allies as preferred contractors
 - Incorporate additional non-energy benefits and marketing messages

PROCESS RECOMMENDATIONS

- Quality control
 - Consider project inspection costs when setting ongoing inspection rates
- Evaluation
 - Adopt a fast-feedback evaluation approach
 - Monitor product markets and conduct market saturation studies
 - Conduct more frequent, smaller-scope evaluations

OUTLINE



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ELECTRIC PROGRAMS

- What's changed
 - Unit Energy Savings (UES) changes for some measures, based on the evaluation
- Many programs new in 2010 – done much, marketing efforts great, but will need to better manage costs
- CFL study—down to 2 hrs (burn hour sockets)
- Education, education, education

OUTLINE



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SPECIAL STUDIES OF CFLS

- Operating hours
 - Residential
 - Light Logger study
 - 76 residences and 220 light loggers
 - Sample represents 2010-11 program activity
 - Average of 2.02 hours per day
 - Hours before 2010 adjusted based on earlier metering studies
 - Hours for each program based on bulb count by year
 - E+ New Homes - 2.24
 - E+ Residential Lighting - 2.30
 - NEEA Initiatives - 2.4
 - Non-residential
 - Hours per day from Commercial CFL Direct Install - 6.14
- Non-residential share of “Buy-Down” bulbs from Trade Ally surveys
 - 19.4% - Applied to E+ Residential Lighting and NEEA CFL initiatives

OUTLINE



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AUDITS/APPRAISALS

- Surveys, site visits, records
- Evaluation reduced savings claimed
- Still Public Purpose Program not same cost effectiveness requirements as DSM programs
- Still foundation for other programs and interactions
- Work to maximize benefits to customer and other programs—best education opportunity
- Continue excellence and work to be good stewards of customer dollars.

OUTLINE



Summary of Report
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RENEWABLES

- Part of Universal Systems Benefit Program
 - Mostly solar Photovoltaic (PV)
 - Some small-scale wind
 - Others: geothermal, micro-hydro, biomass
- Incentive funds intended to offset % system cost
 - Must use qualified installer
- Can be grid tied (net metered) or stand-alone
- Demand is strong >1,000 net metered solar (since 1999)
- Legislative activity every session
- More demand than funding available
- Changing market >>>> solar
 - array cost down to 1/3 of cost in previous years

OUTLINE



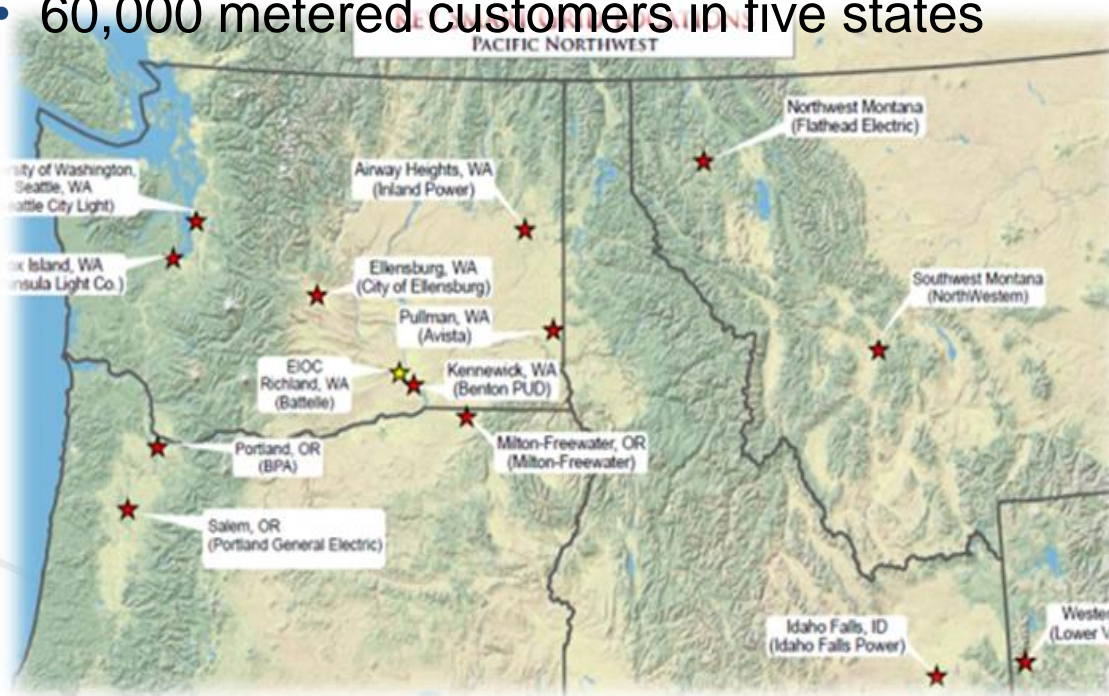
About NorthWestern
Energy
DSM Evaluation
Efficiency Evaluation
Smart Grid Project

SMART GRID

- PNWSGDP
- NorthWestern's role in PNWSGDP
- Project locations - Helena and Philipsburg
- Utility Side - Distribution Automation
- Utility Side - Volt/VAR
- Customer Side – Home Area Network
- Customer Side – Commercial Buildings

PNW SMART GRID DEMONSTRATION PROJECT

- Battelle led ARRA project in collaboration with Bonneville Power Administration, 11 Utilities, 2 Universities and 5 vendors
- \$178M, five-year cost-shared demonstration
- 60,000 metered customers in five states



PNW-SGDP - TIMELINE & STATUS

	2010	2011	2012	2013	2014
Phase 1 - Design	6 months				
Phase 2 - Build Out		24 months			
Phase 3 - Data Collection				24 months	
Phase 4 - Cost Benefit Analysis & Reporting					6 mont

- Contracts
- Design System

- Sites Running
- Data Gather & Analysis

- Install Equipment
- Build & Test System

- Cost/Benefit
- Transition Plan

■ Today



Pacific Northwest
SMART GRID
 DEMONSTRATION PROJECT

NorthWestern Energy | **SMART GRID**
 Delivering a Bright Future | DEMONSTRATION PROJECT

WALK BEFORE WE RUN – LOOK BEFORE WE LEAP

- Install, test, demonstrate, inquire & evaluate
 - Does the technology work?
 - What does it cost?
 - Is it reliable?
 - Will consumers accept and use the technology?
 - Will they be willing to pay for it?
 - Will price signals work to change/improve the current pattern of demand?
 - Time-of-Use energy pricing
 - More closely match time & cost of energy production with energy consumption
 - Cost causer pays

NWE'S - ROLE AND OBJECTIVES

- Contributing member/participant in the larger regional experiment
- Learn from the results of the other utility's and the regional experiments
- Test & demonstrate Smart Grid technologies
- Evaluate costs, benefits and impacts on system
- Better position ourselves to make informed decision regarding future possible deployments

- Utility "side" of the project:
 - Distribution Automation – improve reliability
 - Volt/VAR Optimization [VVO] – energy savings

- Customer "side" of the project:
 - Provide customers with new & innovative ways to control usage
 - Time of Use Pricing – energy savings
 - Demand Response & Load Control – energy savings

NWE'S COMMITMENT & PROJECT LOCATIONS³⁷

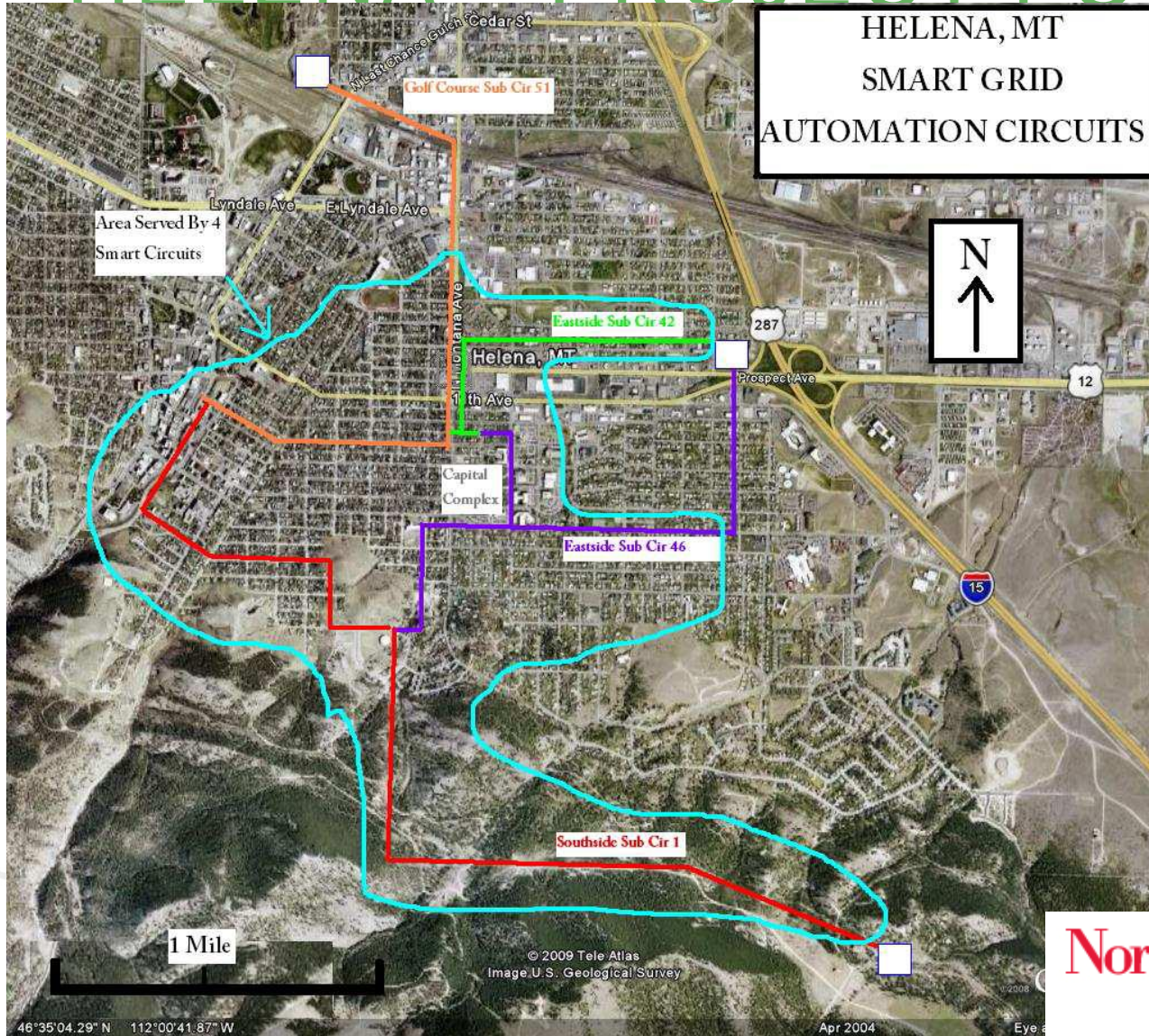
- Budget = \$4.2 million
 - 50/50 cost sharing with DOE funds
- Scope: A Distribution Project in two locations
 - City of Helena (urban area)
 - 3 – Substation (out of 7)
 - 8 – Distribution Circuits
 - Approximately 200 homes, and 2 state government facilities
 - Philipsburg (rural area)
 - 1 – Substation
 - 1 – Distribution Circuit (240 line miles)

HELENA, MT - OVERVIEW



- Population within City Limits 30,000, greater area about 70,000.
- Electric Load 90 MW

HELENA – PROJECT FOOTPRINT



NorthWestern Energy | SMART GRID
Delivering a Bright Future | DEMONSTRATION PROJECT



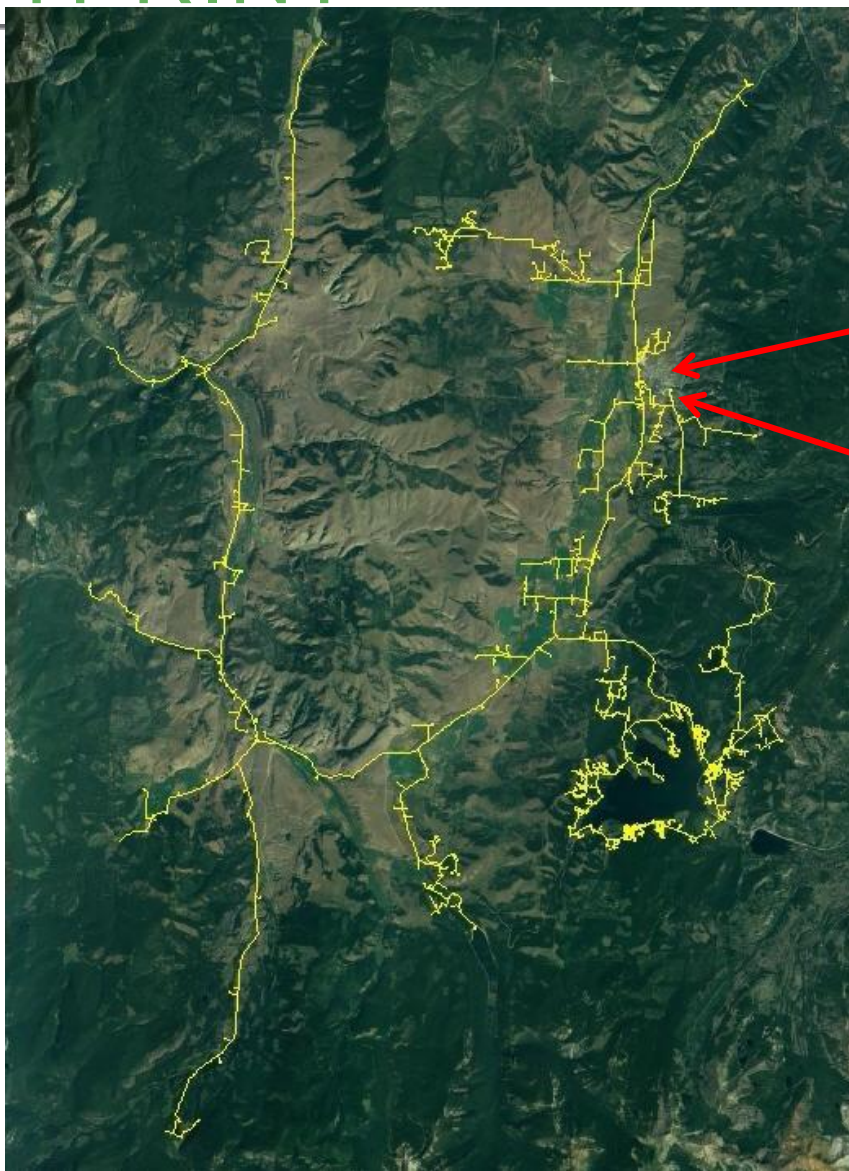
PHILIPSBURG, MT - OVERVIEW



40

- Population approximately 900 in town + rural.
- Electric Load approximately 2.5 MW

PHILIPSBURG – PROJECT FOOTPRINT



Philipsburg Circuit 25-3

41

Town of Philipsburg

Philipsburg Substation

Scale:



2 Miles
Approx.

NorthWestern
Energy
Delivering a Bright Future

SMART
GRID
DEMONSTRATION PROJECT

ENERGY



OBJECTIVE: DISTRIBUTION AUTOMATION



NorthWestern Energy | SMART GRID
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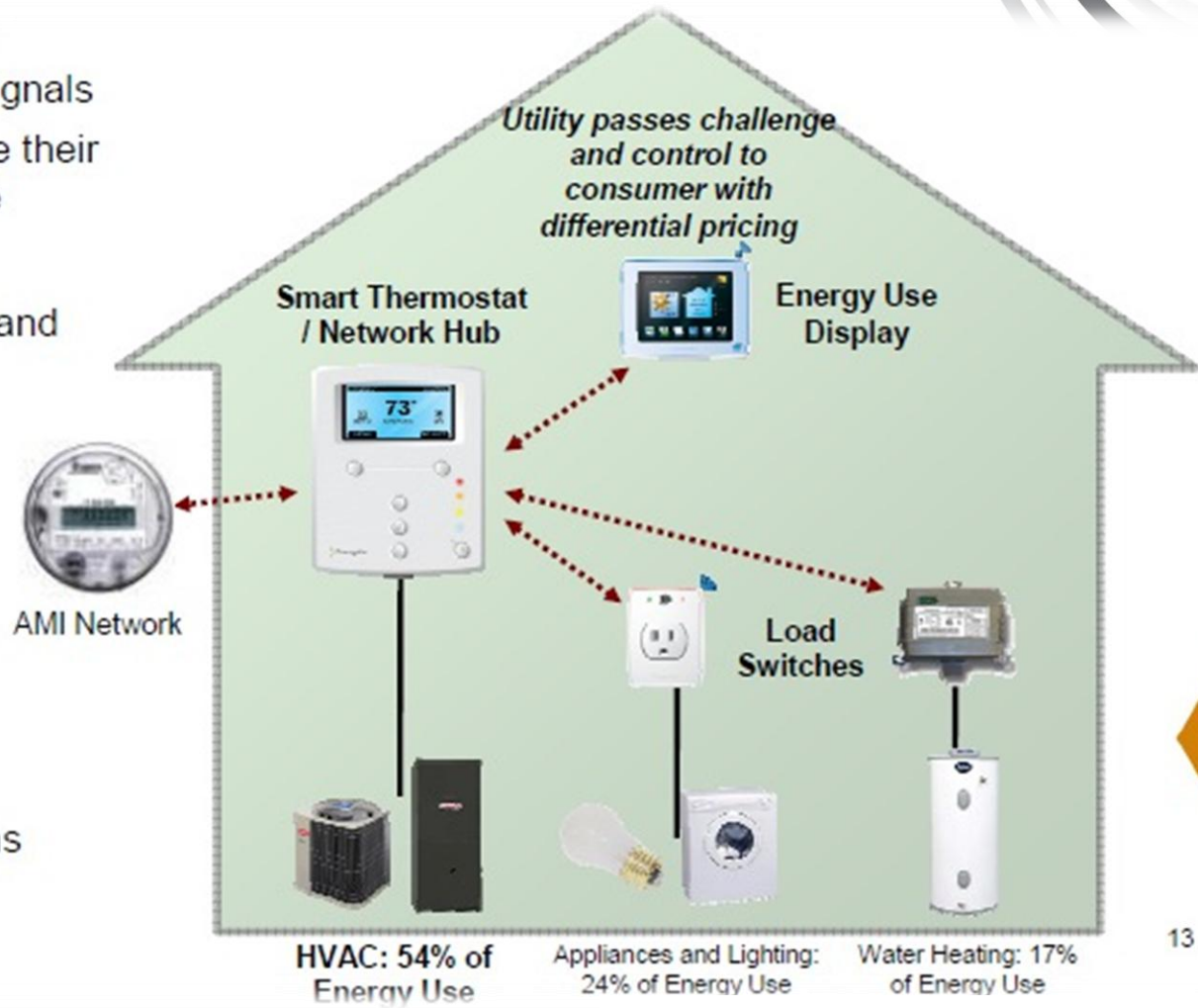
WHAT HAVE WE LEARNED?

- Lack of “plug and play” between systems and technology
 - “Its Ethernet and DNP ready”
 - “Its communications read”
 - Often significant configuration needs to take place.
 - Often significant troubleshooting needs to take place to identify what needs to be configured.
- Vendors
 - Excellent support from S&C and Cooper

CUSTOMER SIDE OF METER – TEST DEMAND RESPONSE & LOAD CONTROL

Consumers

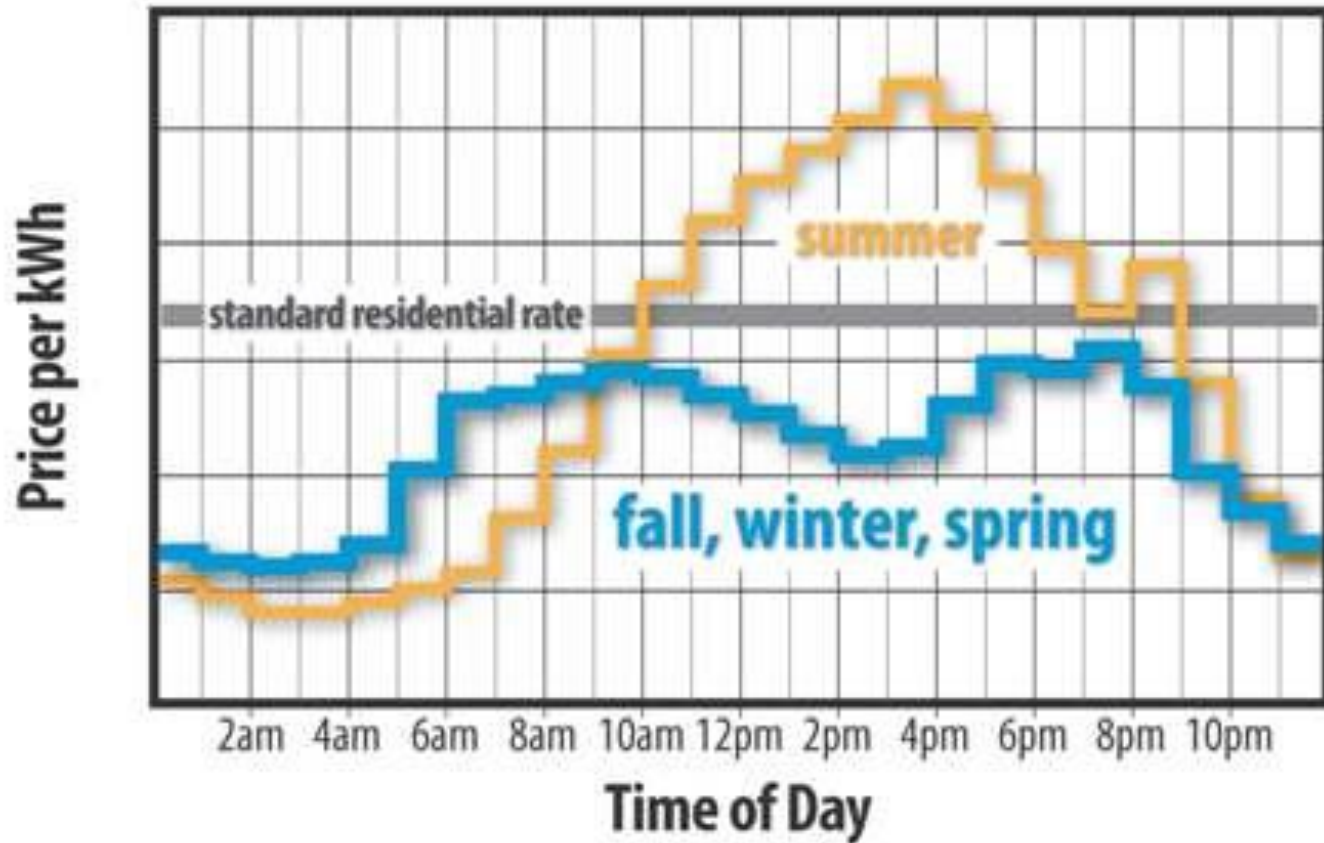
- Utilities provide price signals
- Consumers can choose their settings based on price
- Consumers can save
- Consumer can control and automate preferences



Utility

- 2-Way Communications

PRICING (RATES)



Home Area Network (HAN)

- Install HAN – goal to provide customers more info & ways to Control Usage
- Web-based services
 - Energy Use Profiles
 - (via in-home displays)
- Offer time variable pricing
- Observe customer response to pricing signals
- Evaluate performance of metering, communications & HAN technology



INTERVAL METERING & DATA HOSTING STATUS

- ITRON, Inc.
 - 200 Centron meters
 - 4 Cell Control Units & 10 Repeaters
 - Wireless network
 - Collect 15-minute electric interval data
 - Data hosting & MDM services Itron @ Liberty Lake, WA
 - Export meter data to NorthWestern's MV-90 system



HOME AREA NETWORK COMPONENTS

Display



Monitor & Control



Network



HOME AREA NETWORK "DASHBOARD"



DASHBOARD

EXPLORE

HOME NETWORK

EVENTS

USER PROFILE

ACCOUNT STATUS

Amy's Home

in Helena



75° F

Mostly Cloudy

Program:

Montana Energy Smart

Rate: **Energy Supply Flat Rate**

6.13¢ / kWh



MESSAGES



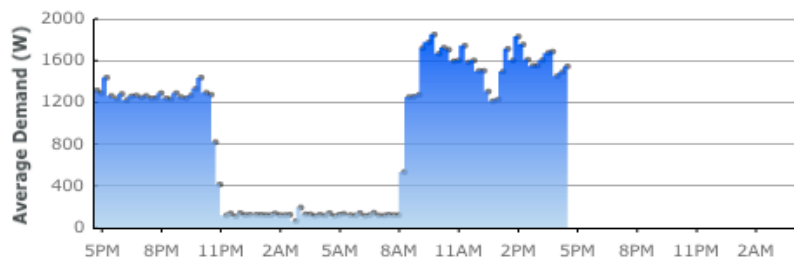
Friday, September 09, 2011 3:33 PM

Importance: NORMAL

This message is to alert you to an upcoming Peak Energy Event. This event will occur Friday, September 9th from 3 p.m. until 5 p.m. Thank you for participating in the Montana Energy Smart program. If you have any questions please call: [877-220-2839](tel:877-220-2839).

"How am I doing" messages to residential participants

TODAY'S USAGE



ESTIMATED BILL

Bill Cycle: September 01 to October 01, 2011

Estimated Total Bill: \$38.44

Estimated Bill to Date: \$27.77

Today's Cost: 86.00¢



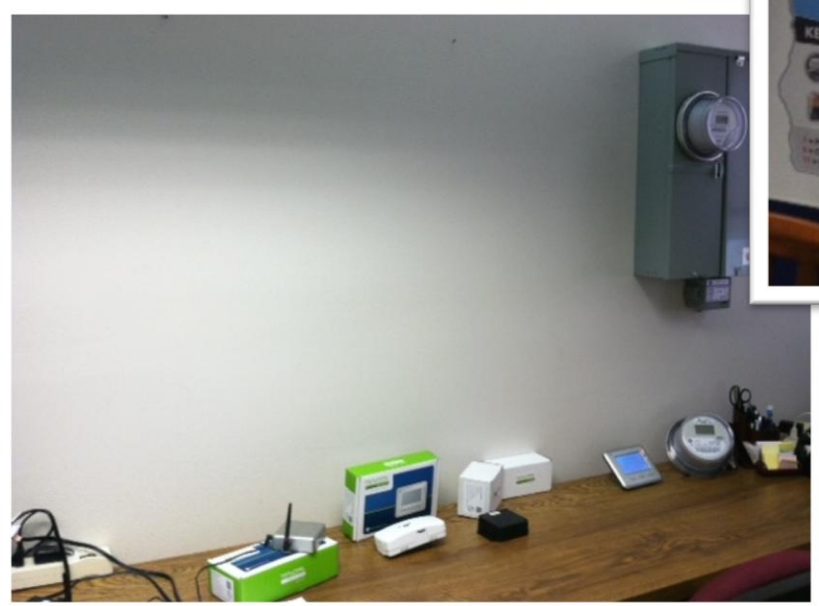
TIME OF USE PRICING - for selected participants

(Cont.) • 3-level Time of Use Energy Pricing (traffic signal color scheme)

- On peak (\$0.08/kwh)
- Mid (\$0.05/kwh)
- Off Peak (\$0.03/kwh)

	Mountain Time - Hour Ending																							
	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	NOON	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
Jan	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.05	0.03
Feb	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.05	0.03
Mar	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.05	0.03
Apr	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.03
May	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.03
Jun	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.03
Jul	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.03
Aug	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.03
Sep	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.03
Oct	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.05	0.03
Nov	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.05	0.03
Dec	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.08	0.05	0.03

SMART GRID DEMONSTRATION LAB



HOME PAGE DESIGN



SMART
GRID
DEMONSTRATION PROJECT

PROGRAM DESCRIPTION ENROLLMENT PRODUCT INFO RESOURCES



PROGRAM DESCRIPTION



NorthWestern Energy has joined with regional partners to develop a Smart Grid Demonstration Project.

[Learn More >>](#)

ENROLLMENT



NorthWestern Energy has selected a sample group of customers to participate in the project.

[Learn More >>](#)

RESOURCES



This extensive library will provide you with tons of information and valuable facts.

[Learn More >>](#)

PRODUCT INFO

TEANORL Energize

8.0 Off-Peak 43° 68° Home

Goal Progress

Cost This Billing Period: \$97

Estimated Cost To Date: \$127

Projected Cost This Period: \$162 of \$97

You need to save \$6 in the next 4 days to make your goal this week. **Hit your 10% goal - Free in the calculator!**

Meet your goal! Add these to your checklist:

- Save up to \$15 per year Use your dishwasher's Economy mode
- Save up to \$10 per year Buy an EnergyStar Freezer

0:00 / 0:00

STATE OF MONTANA BUILDINGS

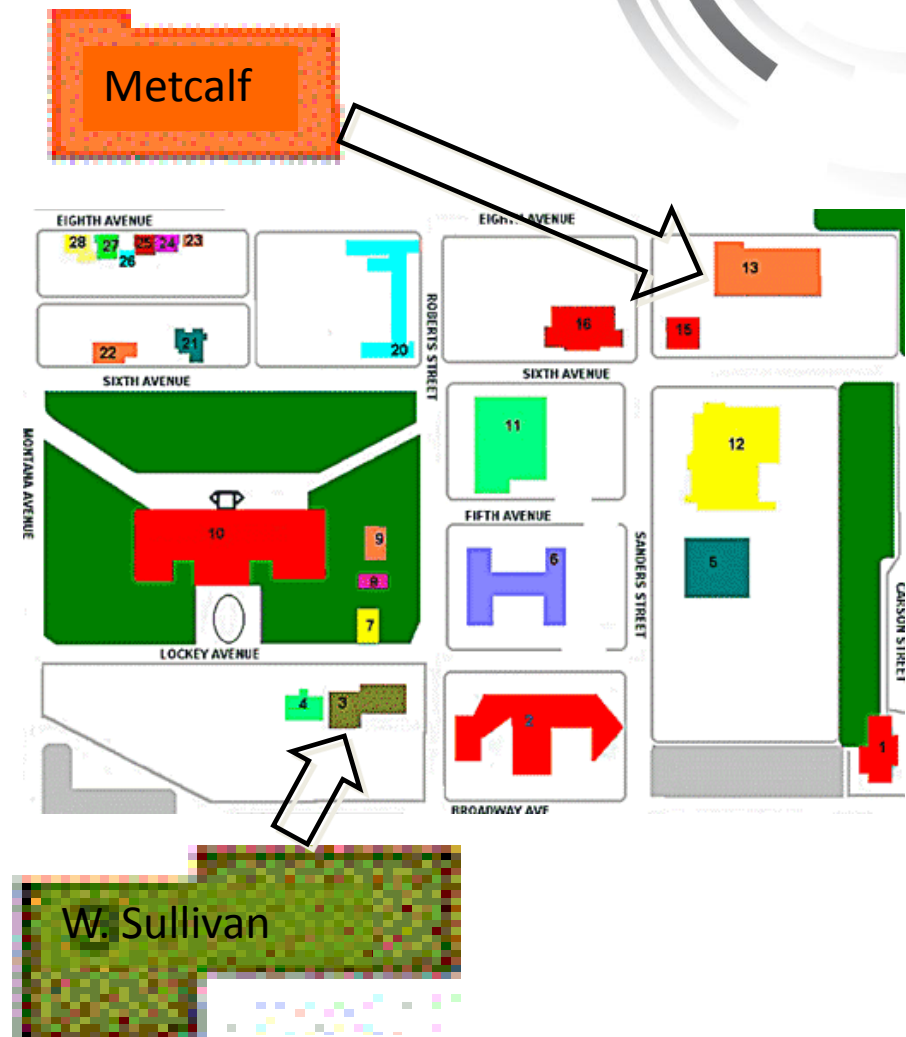
- Metcalf Building Tasks

 - Lighting Control

 - Installed control areas along outside windows
 - overhead lights
 - Installed diming control in other areas

- Walt Sullivan Building Tasks

 - HVAC Additional Control - Upgraded ventilation and air conditioning controls



WHAT HAVE WE LEARNED?

- Do we try to make consumers smarter about energy, or devices and systems that automate the decisions that result in energy consumption?
- Consumers want control, options and choices
 - But, they want Cruise Control ... “Set it and forget it”
- Diversity + Complexity = Stability?

- End of Project – December 2014
 - Finish Testing October 2014
 - Final report with business case analysis
 - DA and Volt/VAR software analysis for SCADA
 - Access to all Project and Sub-Project level reports from PNWSGDP

QUESTIONS?

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