



# Getting Everyone to “Yes”: Standardizing Meter Data Analysis

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# Vermont Energy Investment Corporation

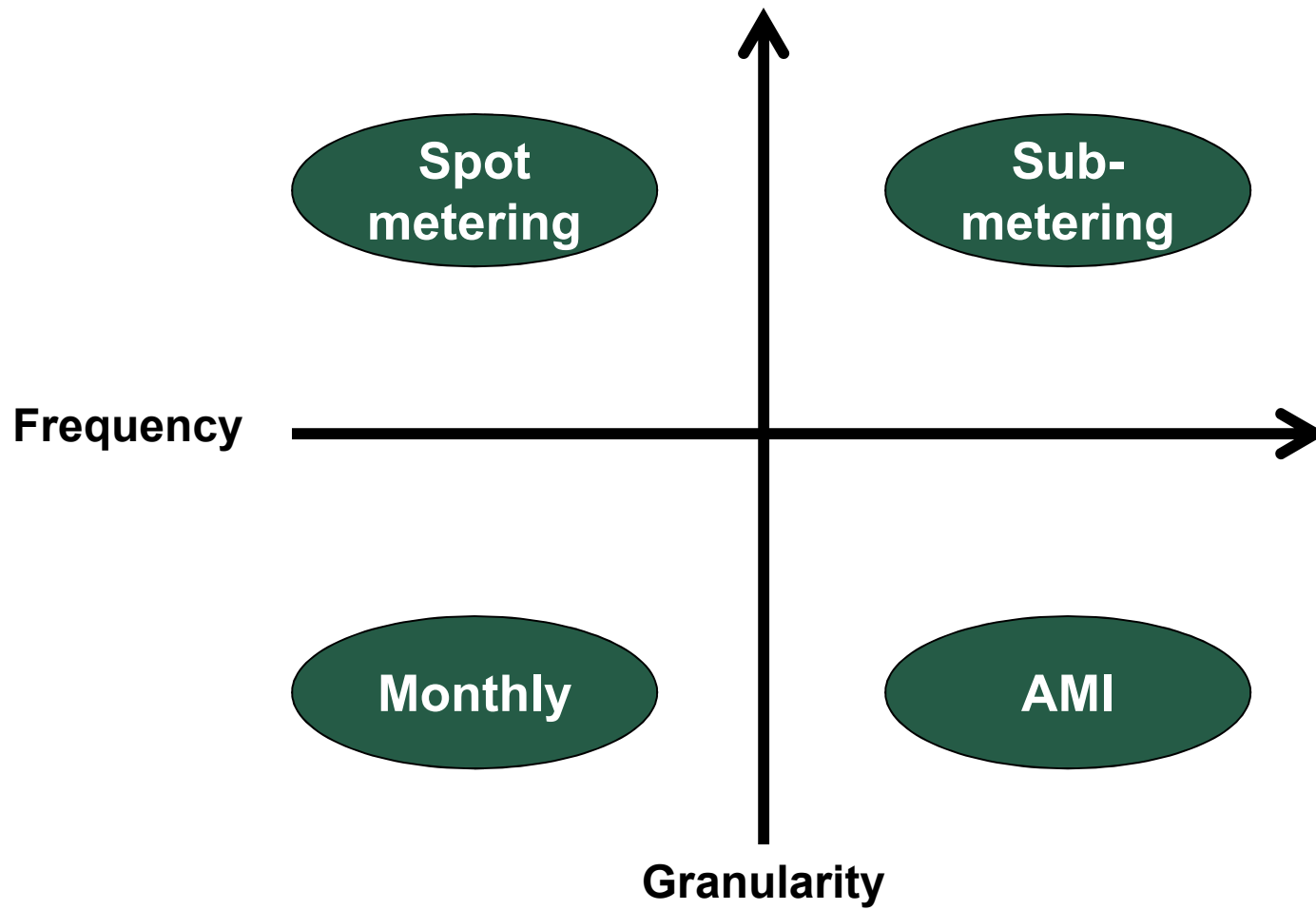
- Mission-driven nonprofit
- Over 25 years reducing economic, environmental costs of energy
- Energy efficiency, renewable energy & transportation
- Consulting & implementation
- 3 energy efficiency utilities



# The Meter Cave



# Data: More is Better!

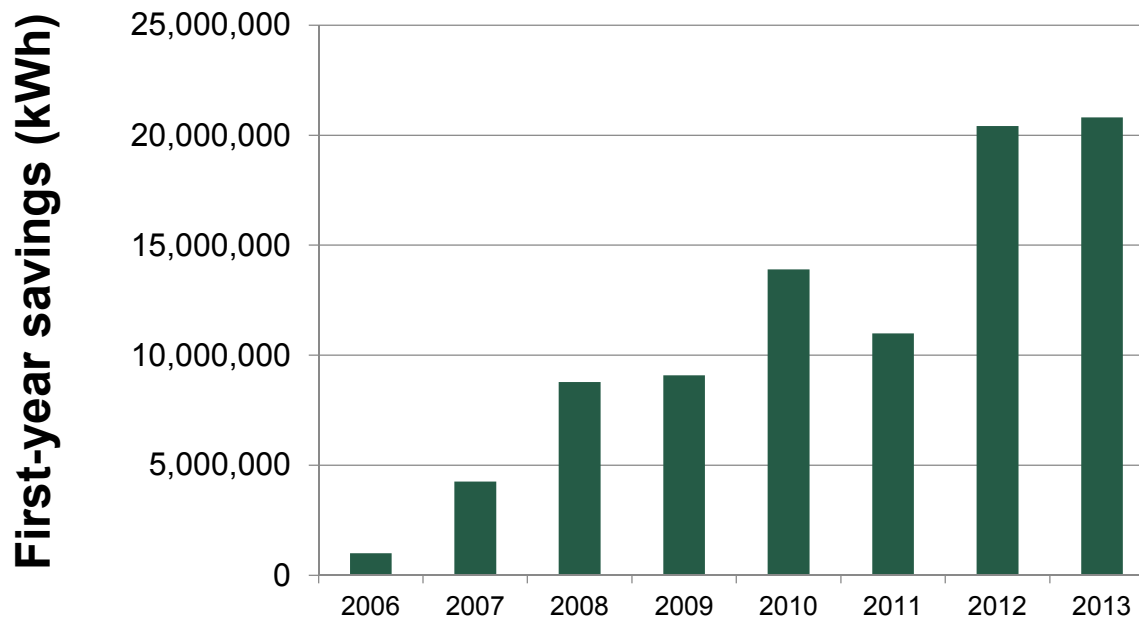




# Old Faithful



# All the Cool Kids Are Doing It



# I Got Your Data Right Here



= 32.7 kWh / year

# Says Who?





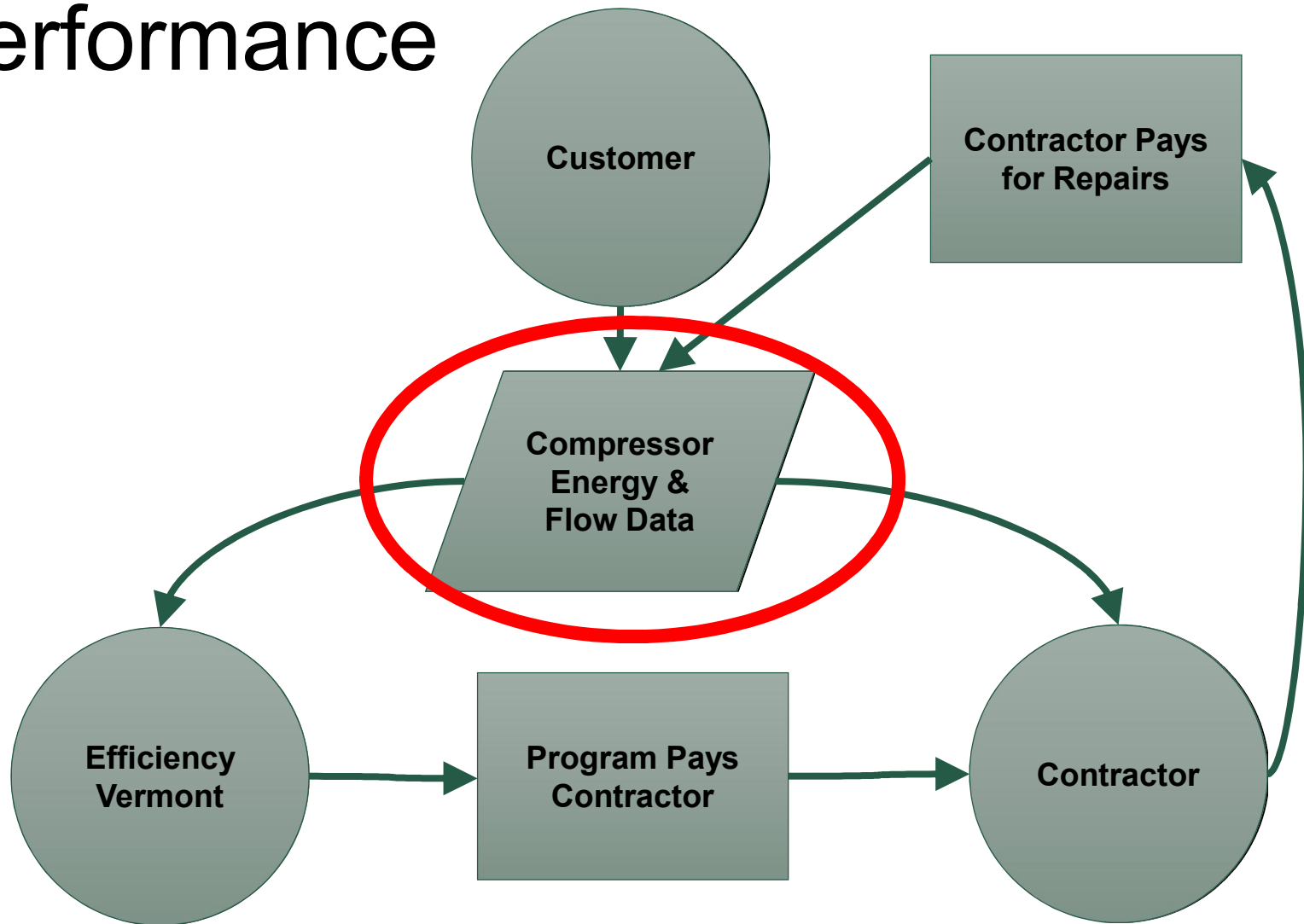


# And a Bargain at Half the Cost!\*

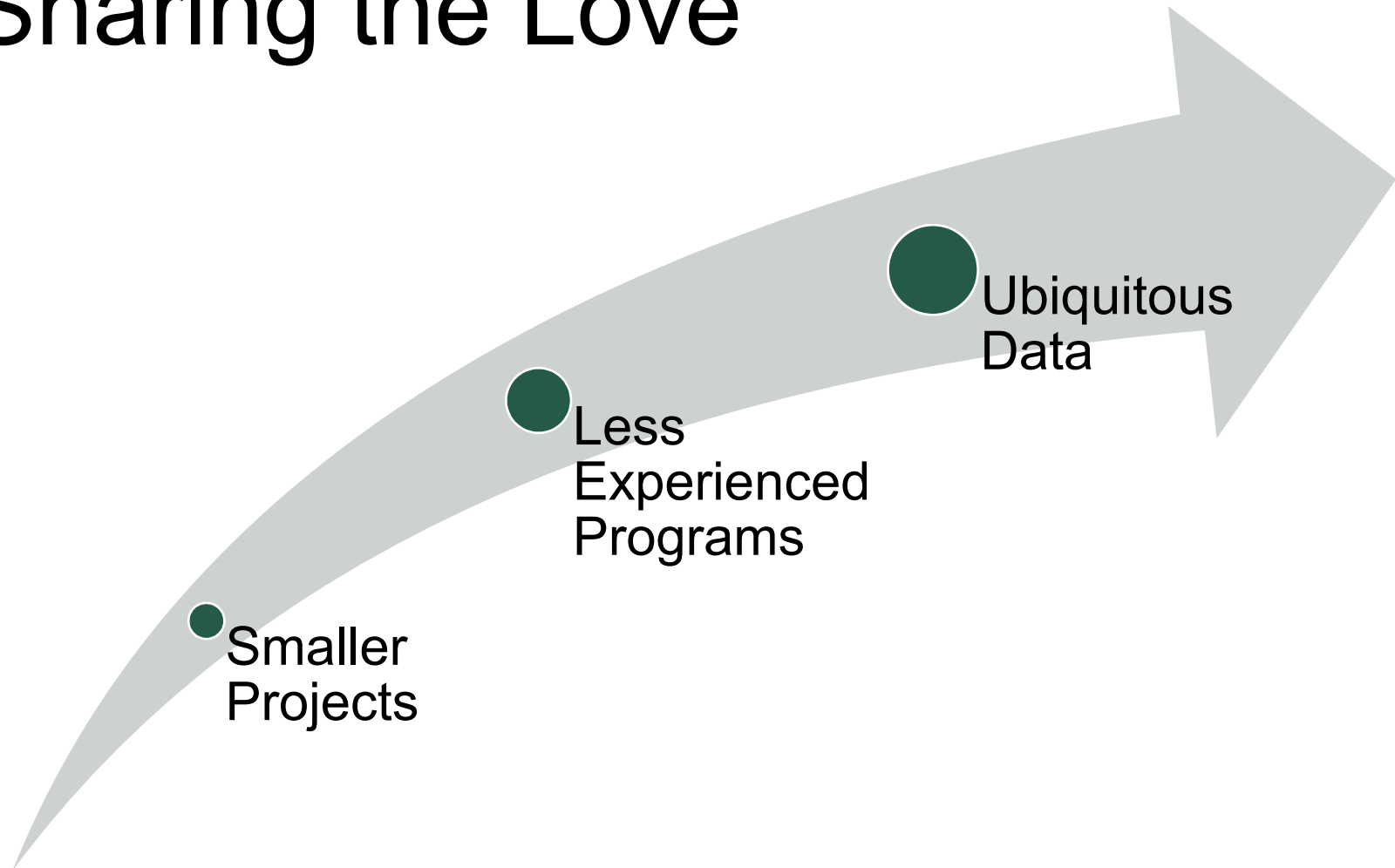
<b>Step</b>	<b>Work time (hours)</b>	<b>Elapsed time (days)</b>
<b>Develop plan</b>	1 – 20	1 – 60
<b>Schedule meters</b>	0.25 – 8	1 – 4
<b>Deploy meters</b>	5 – 13	1 – 2
<b>Collect data</b>	0	7 – 60
<b>Retrieve &amp; download data</b>	1 – 5	1 – 2
<b>Analyze data</b>	1 – 25	1 – 14
<b>TOTAL</b>	8 – 71 hours of work	12 – 142 days elapsed

\*\$2,500/project average with internal labor costs

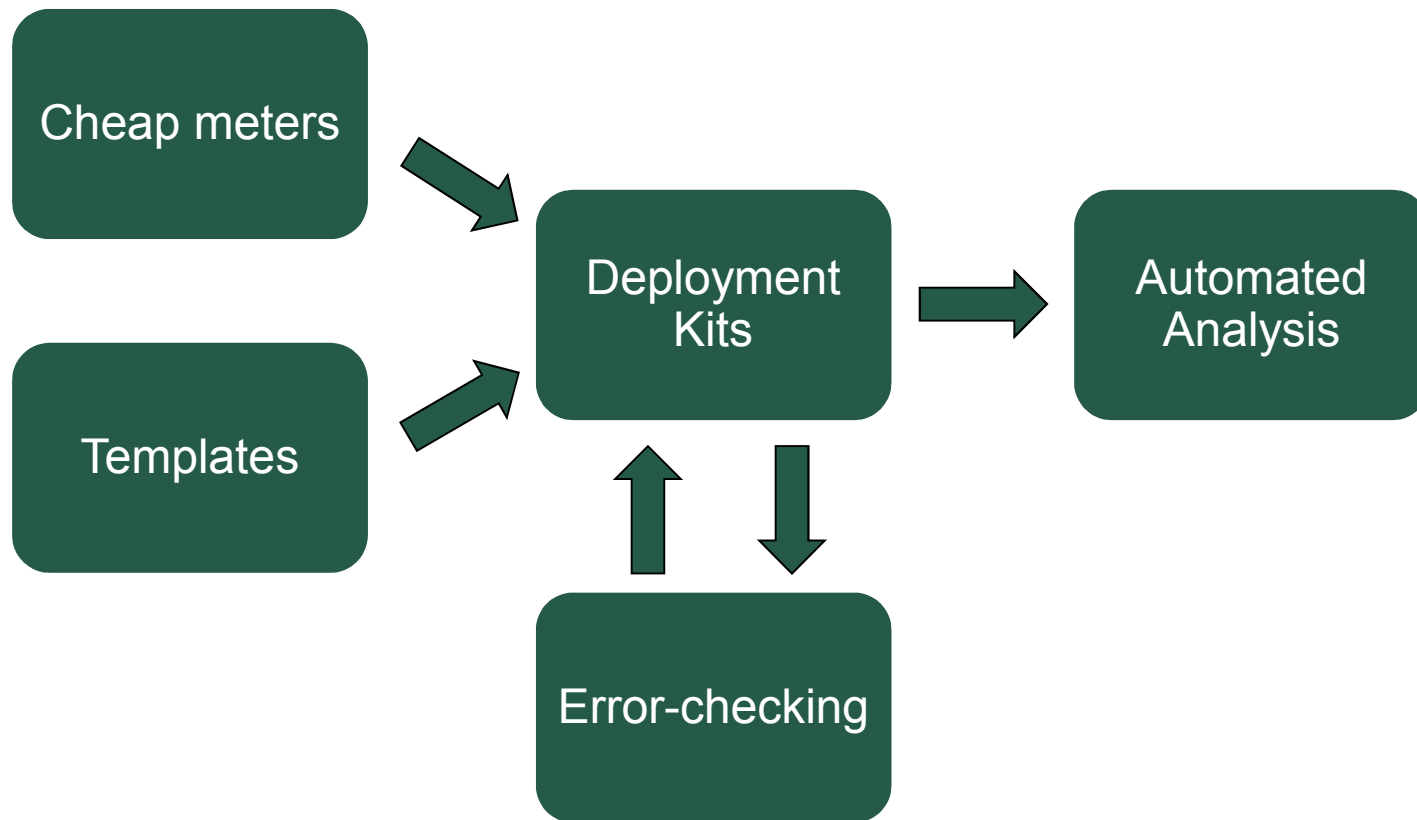
# Compressed Air Pay-for-Performance



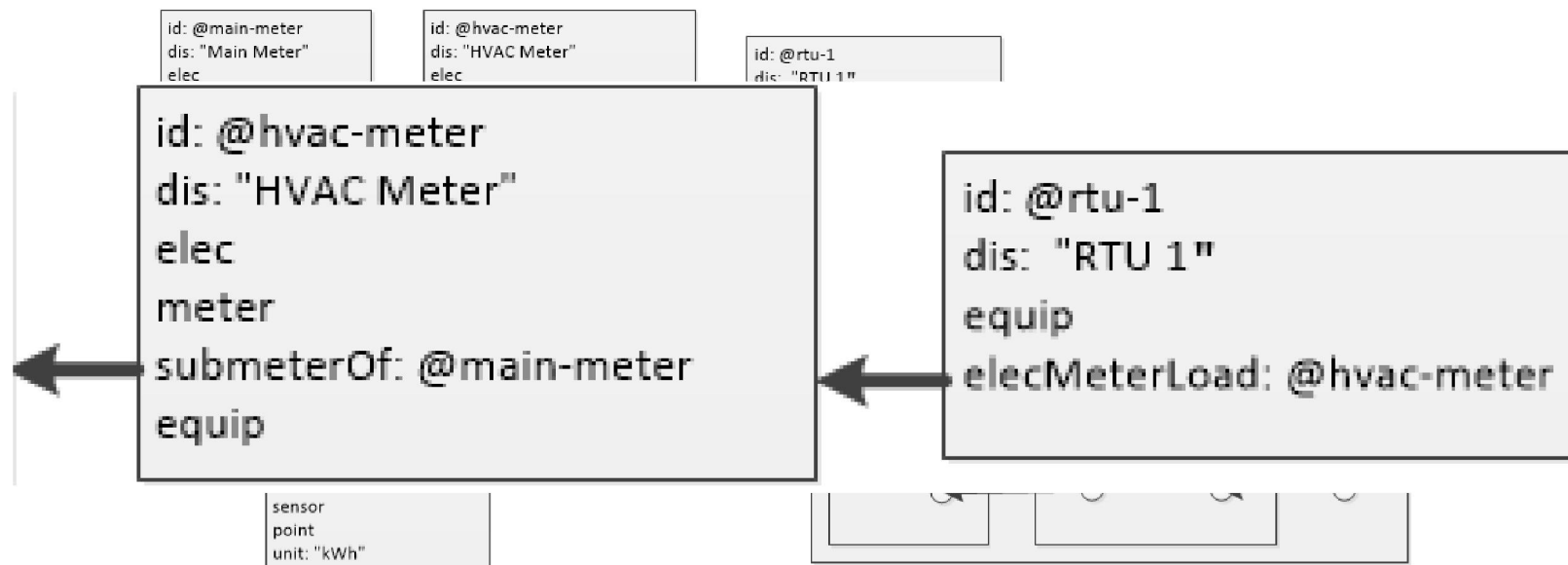
# Sharing the Love



# Process Improvements



# Finding the Needles



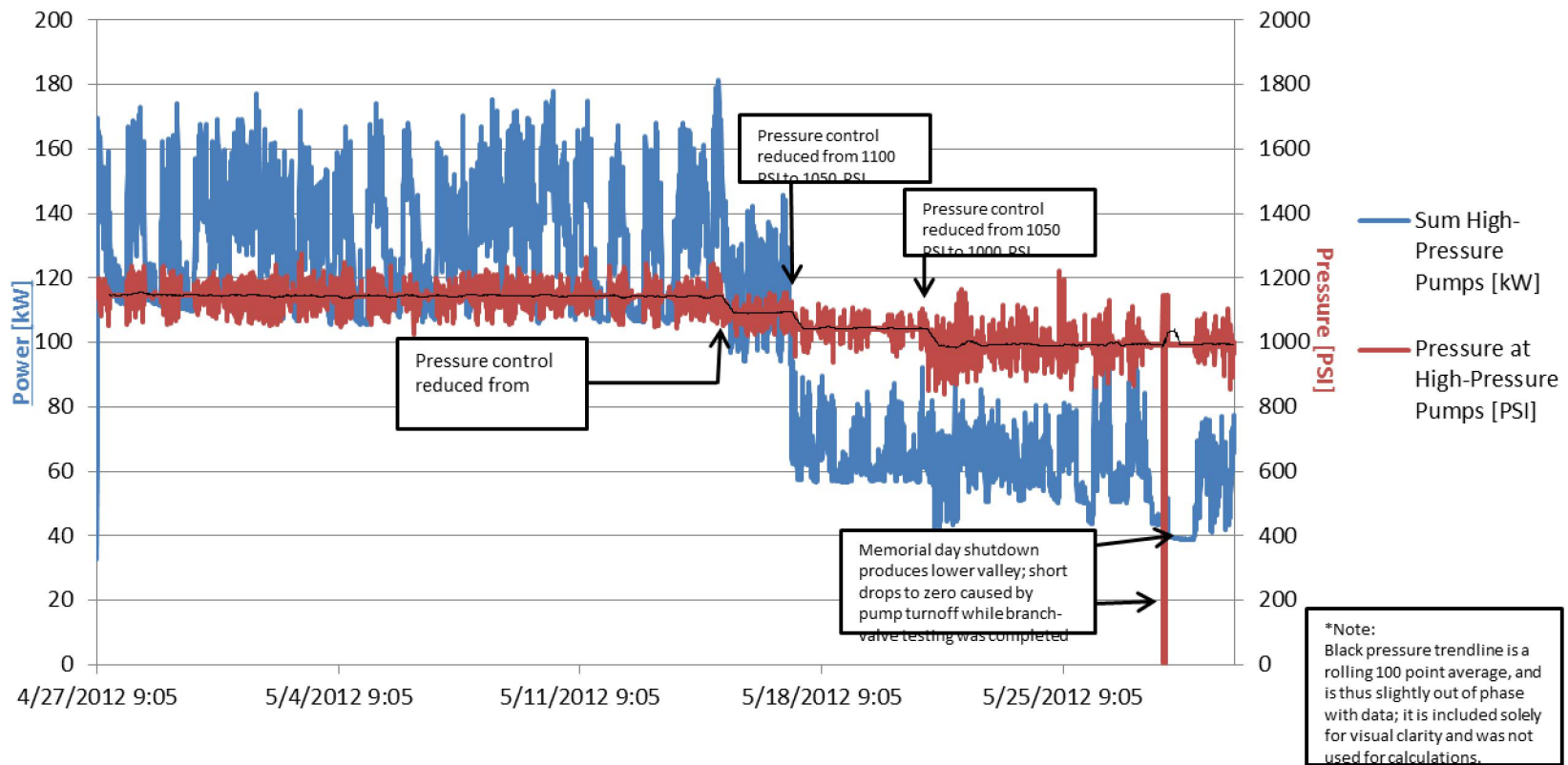


# Data, Data, Everywhere...

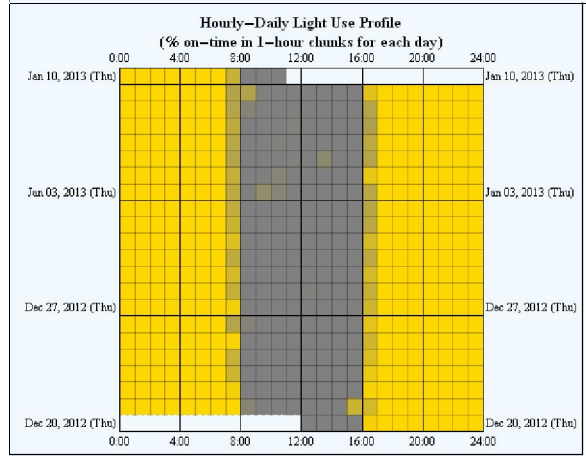
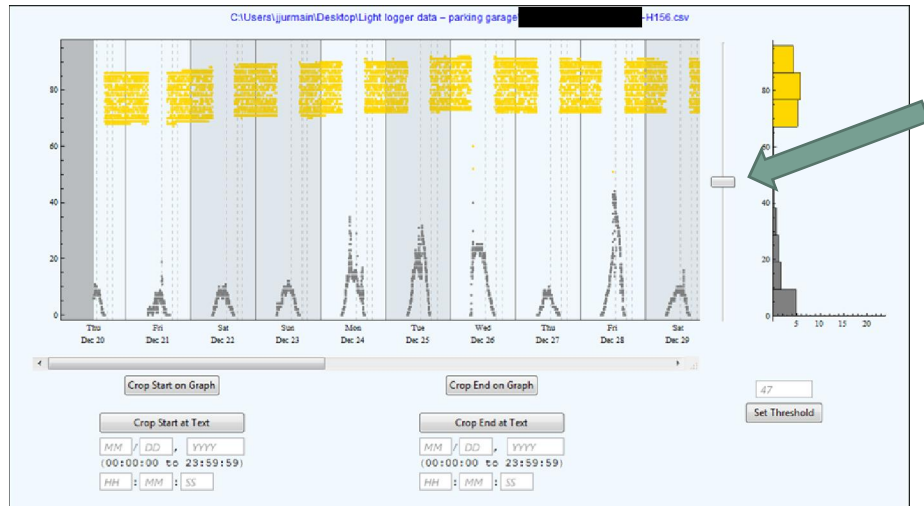
Date & Time	Record Date	Record End Time	Day of Week	High Pressure Pump 1 [kW]	High Pressure Pump 2 [kW]	High Pressure Pump 3 [kW]	High Pressure Pump 4 [kW]	High Pressure Pump 5 [kW]	High Pressure Pump 6 [kW]
4/27/2012 9:05	4/27/2012	9:05:00	6	32.764					
4/27/2012 9:10	4/27/2012	9:10:00	6	32.959	32.398				
4/27/2012 9:15	4/27/2012	9:15:00	6	31.135	31.146	29.48			
4/27/2012 9:20	4/27/2012	9:20:00	6	31.603	31.528	30.705			
4/27/2012 9:25	4/27/2012	9:25:00	6	31.211	31.186	29.021	30.878		
4/27/2012 9:30	4/27/2012	9:30:00	6	30.824	30.676	29.938	31.092	31.077	
4/27/2012 9:35	4/27/2012	9:35:00	6	33.57	33.361	32.841	33.842	1.849	12.562
4/27/2012 9:40	4/27/2012	9:40:00	6	33.308	33.091	31.945	33.42	0	33.374
4/27/2012 9:45	4/27/2012	9:45:00	6	33.968	33.783	33.258	34.28	0	34.276
4/27/2012 9:50	4/27/2012	9:50:00	6	33.604	33.304	32.447	33.694	0	33.642
4/27/2012 9:55	4/27/2012	9:55:00	6	33.314	33.338	32.438	33.521	0	33.518
4/27/2012 10:00	4/27/2012	10:00:00	6	33.194	32.835	32.219	33.388	0	33.383
4/27/2012 10:05	4/27/2012	10:05:00	6	31.99	31.932	29.393	31.335	0	31.221
4/27/2012 10:10	4/27/2012	10:10:00	6	30.565	30.557	29.598	30.955	0	30.931
4/27/2012 10:15	4/27/2012	10:15:00	6	30.355	30.335	28.181	29.86	0	29.787
4/27/2012 10:20	4/27/2012	10:20:00	6	29.657	29.437	28.933	30.078	0	30.117
4/27/2012 10:25	4/27/2012	10:25:00	6	30.353	30.443	28.331	30.047	0	29.963
4/27/2012 10:30	4/27/2012	10:30:00	6	28.775	28.515	27.332	28.847	0	28.84
4/27/2012 10:35	4/27/2012	10:35:00	6	28.011	27.703	26.793	28.074	0	28.065
4/27/2012 10:40	4/27/2012	10:40:00	6	28.563	28.427	27.543	28.81	0	28.835
4/27/2012 10:45	4/27/2012	10:45:00	6	29.268	29.148	28.398	29.488	0	29.474
4/27/2012 10:50	4/27/2012	10:50:00	6	30.253	30.188	29.787	30.758	0	30.815
4/27/2012 10:55	4/27/2012	10:55:00	6	32.115	32.109	30.454	31.639	0	31.627

# Jackpot! (Eventually)

## High Pressure Line - Compiled Pressure and Power



# Follow the Bouncing Light Level



Total Percent On-Time: 63.93 %

Projected Annual Operating Hours: 5600.00 Hrs

Projected On-Time During Summer Peak: 16.92 %  
(1-5 PM, Mon-Fri, Jun - Aug, excluding federal holidays)

Projected On-Time During Winter Peak: 100.00 %  
(5-7 PM, Mon-Fri, Dec & Jan, excluding federal holidays)

Annual projection based on 20.96 metered days  
FCM projection based on 13 metered business days

# Can I Get a Witness?

