

Special Meeting
Thursday, January 30, 2020
6:00 p.m.



Unalaska City Hall
Council Chambers
43 Raven Way

Council Members
Thomas D. Bell
Darin Nicholson
David M. Gregory

UNALASKA CITY COUNCIL

P. O. Box 610 • Unalaska, Alaska 99685
(907) 581-1251 • www.ci.unalaska.ak.us

Council Members
Dennis M. Robinson
Alejandro R. Tungul
Shari Coleman

Vincent M. Tutiakoff Sr., Mayor
Erin Reinders, City Manager

AGENDA

1. **Call to order**
2. **Roll call**
3. **Pledge of allegiance**
4. **Adoption of agenda**
5. **Work session** *Work sessions are for planning purposes, or studying and discussing issues before the Council.*
 - a. Update on Ounalashka/Chena Power, LLC geothermal project
6. **Adjournment**

Makushin Geothermal Project Update

January 30, 2020

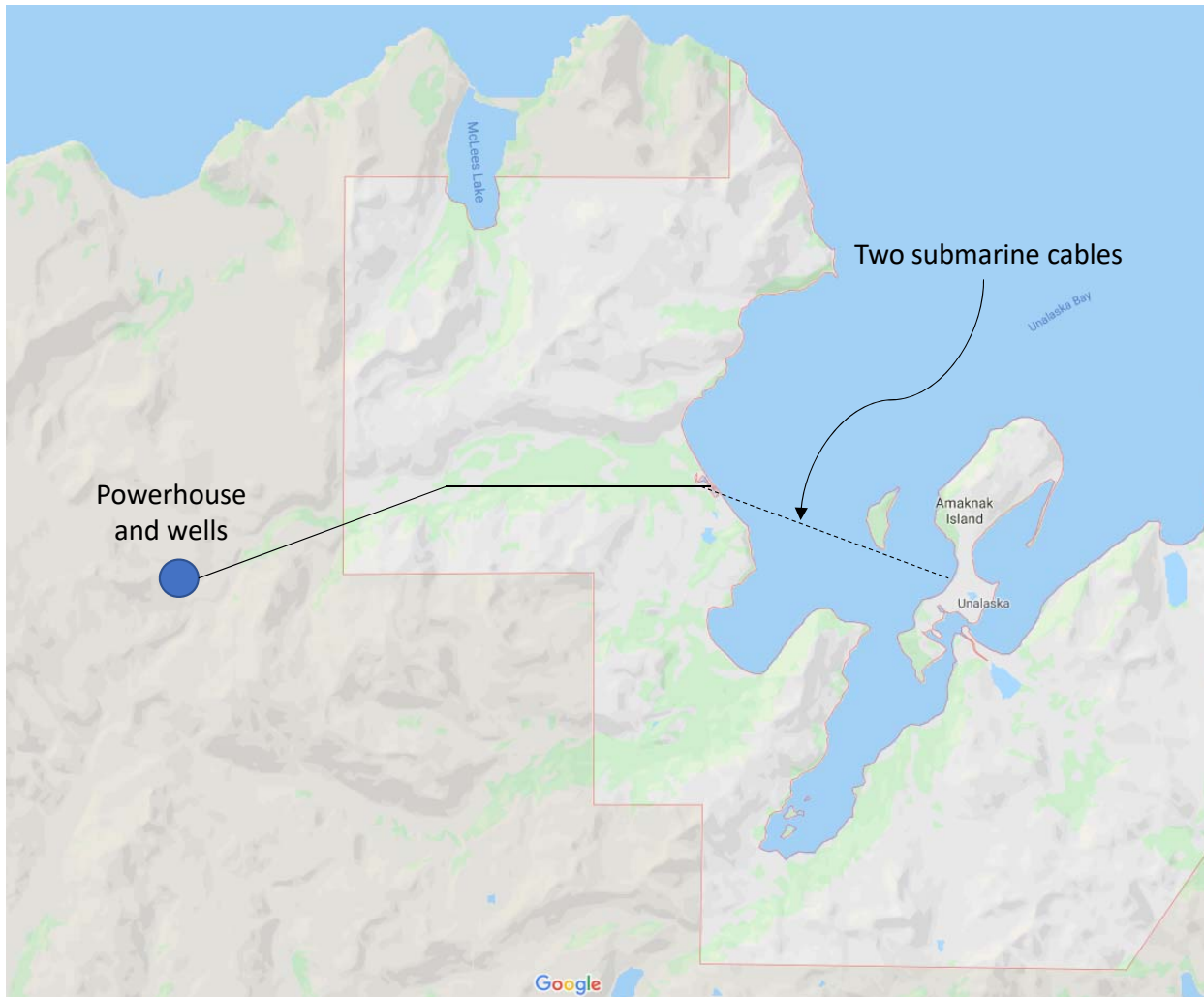
the Financial Engineering Company

Purpose of Meeting

- Developer (OCCP) is asking City to make key decisions in the very near future
- Today's presentation is to keep Council up to date and describe potential risks and rewards
- No decisions tonight
- Disclaimer....today's presentation is based on preliminary information provided by OCCP

Revised Concept

- No longer piping fluid from source to Unalaska/Dutch Harbor
- New concept is to generate power at well site and transmit electric power to City
 - Tie into City grid near powerhouse
 - Electric power can be used for
 - Existing electric loads
 - Processor loads currently met with self-generation
 - Heat loads by using heat pumps



Powerhouse

- Built in modules of 6 MW per module
- Can be expanded in future
- OCCP indicates initial wells will be able to accommodate some future expansion

Project Financing

- OCCP claims to have non-recourse financing
- If project fails in future, no payment required
- City should make sure if there is a partial failure (*i.e.*, Project cannot operate at full capacity), payment obligations are reduced accordingly

Electric Loads

- Existing City: 55 million kWh generation (approximately 53 million kWh sales)
 - Includes partial requirement sales to Alyeska and Westward
- Self Generation
 - UniSea: 30+ million kWh
 - Alyeska and Westward (net of City): 17 – 18 million kWh
 - Others

Preliminary Proposals

- OCCP proposals based on City committing to a specified minimum amount of energy requirements
- Costs are primarily fixed and rate is therefore sensitive to load
- If actual requirements less than the committed amount - City must still pay
- If actual requirements greater than the committed amount - ???
- Two scenarios:
 - Commit to either 18 MW or 24 MW plant and various minimum takes
 - If commit to 18 MW, can expand to 24 MW later at a greater cost
 - Commit to 24 MW and various minimum takes
 - Preserves lower cost if loads later increase but more risk

Preliminary Rate Proposal

Can move to lower rate as loads increase and commitment made

Can move to lower rate as loads increase and commitment made

	PPA Obligations	Electrical Charge in \$/Kwh	Scenarios	Commitment time frame
Option 1.1A	The City commits to purchase 35,000,000 kwhr/year, paid in equal monthly payments, with an annual escalation rate of 1%. End of year reconciliation where any amount over the minimum is billed as same rate. 30 year commitment	0.33	Represents case where OCCP installs a 18 MWg power plant to satisfy a 12MW peak load that accomodates the Cities current demand and peak requirements, but at a commitment level by city less than current demand.	Minimum City commitment for Framework PPA by January 28, 2020
Option 1.1B	The City commits to purchase 53,000,000 kwhr/year, paid in equal monthly payments, with an annual escalation rate of 1%. End of year reconciliation where any amount over the minium is billed at same rate. 30 year commitment	0.22	Represents case where OCCP installs a 18 MWg power plant to satisfy a 12MW peak load that accomodates the Cities current demand and peak requirements	Minimum City commitment for Framework PPA by January 28, 2020
Option 1.2	The City commits to purchase 71,600,000 kwhr/year, paid in equal monthly payments, with an annual escalation rate of 1%. End of year reconciliation where any amount over the minium is billed at same rate. 30 year commitment	0.17	Represents case where OCCP installs a 18 MWg power plant to satisfy a 16 MW peak load that accomodates the Cities current demand plus the additional loads from current industrial customers currently unmet	City has until May 1, 2020 to exercise option in order to be considered into design basis.
Option 1.3	The City commits to purchase 87,300,000 kwhr/year, paid in equal monthly payments, with an annual escalation rate of 1%. End of year reconciliation where any amount over the minium is billed at same rate. 30 year commitment	0.16	Represents case where OCCP installs a 24 MWg power plant to accomodate a 20 MW peak load that accomodates the Cities current demand plus the additional loads from adding Unisea as its customer.	City has until May 1, 2020 to exercise option n order to be considered into design basis
Option 1.4	The City commits to purchase 103,600,000 kwhr/year, paid in equal monthly payments, with an annual escalation rate of 1%. End of year reconciliation where any amount over the minium is billed at same rate. 30 year commitment	0.14	Represents case where OCCP installs a 24 MWg power plant to accomodate a 24 MW peak load that accomodats Cities exising loads plus Unisea plus existing industrial customers unmet needs.	City has until May 1, 2020 to exercise option in order to be considered in design basis.

Preliminary Rate Proposal – “Full” Commitment

	PPA Obligations	Electrical Charge in \$/Kwh	Sliding Scale	Scenarios	Commitment time frame
Option 2.1A	The City commits to purchase 35,000,000 kwhr/year, (2,916,667 kwhr/month), paid in equal monthly payments, with an annual escalation rate of 1%. Monthly reconciliation where amount over monthly minimum is billed at next step level. 30 year commitment	0.42	Base Rate	Represents case where OCCP installs a 24MWg power plant to satisfy a 12MW peak load that accomodates the Cities current demand and peak requirements, but starts at a commitment level lower than current city demand	Minimum City commitment for Framework PPA by January 28, 2020
Option 2.1B	The City commits to purchase 53,00,000 kwhr/year, (4,416,667 kwhr/month), paid in equal monthly payments, with an annual escalation rate of 1%. Monthly reconciliation where amount over monthly minimum is billed at next step level. 30 year commitment	0.27	Rate applicable on amount of energy used that exceed 2,916,667 kwh in month	Represents case where OCCP installs a 24MWg power plant to satisfy a 12MW peak load that accomodates the Cities current demand and peak requirements	Minimum City commitment for Framework PPA by January 28, 2020
Option 2.2	The City commits to purchase 71,600,000 kwhr/year, (5,966,667 kwhr/month), paid in equal monthly payments, with an annual escalation rate of 1%. Monthly reconciliation where amount over monthly minimum is billed at next step level.	0.20	Rate applicable on amount of energy used that exceed 4,416,667 kwh in month	Represents case where OCCP installs a 24 MWg power plant to satisfy a 16 MW peak load that accomodates the Cities current demand plus the additional loads from current industrial customers currently unmet	City has until May 1, 2020 to exercise option in order to be considered into design basis.
Option 2.3	The City commits to purchase 87,300,000 kwhr/year, (7,275,000 kwhr/month), paid in equal monthly payments, with an annual escalation rate of 1%. Monthly reconciliation where amount over monthly minimum is billed at next step level.	0.16	Rate applicable on amount of energy used that exceed 5,966,667 kwh in month	Represents case where OCCP installs a 24 MWg power plant to accomodate a 20 MW peak load that accomodates the Cities current demand plus the additional loads from adding Unisea as its customer.	City has until May 1, 2020 to exercise option n order to be considered into design basis
Option 2.4	The City commits to purchase 103,600,000 kwhr/year, paid in equal monthly payments, with an annual escalation rate of 1%. Monthly reconciliation where amount over monthly minimum is billed at next step level.	0.14	Rate applicable on amount of energy used that exceed 7,275,000 kwh in month	Represents case where OCCP installs a 24 MWg power plant to accomodate a 24 MW peak load that accomodats Cities exising loads plus Unisea plus existing industrial customers unmet needs.	City has until May 1, 2020 to exercise option in order to be considered in design basis.

A Note About Losses

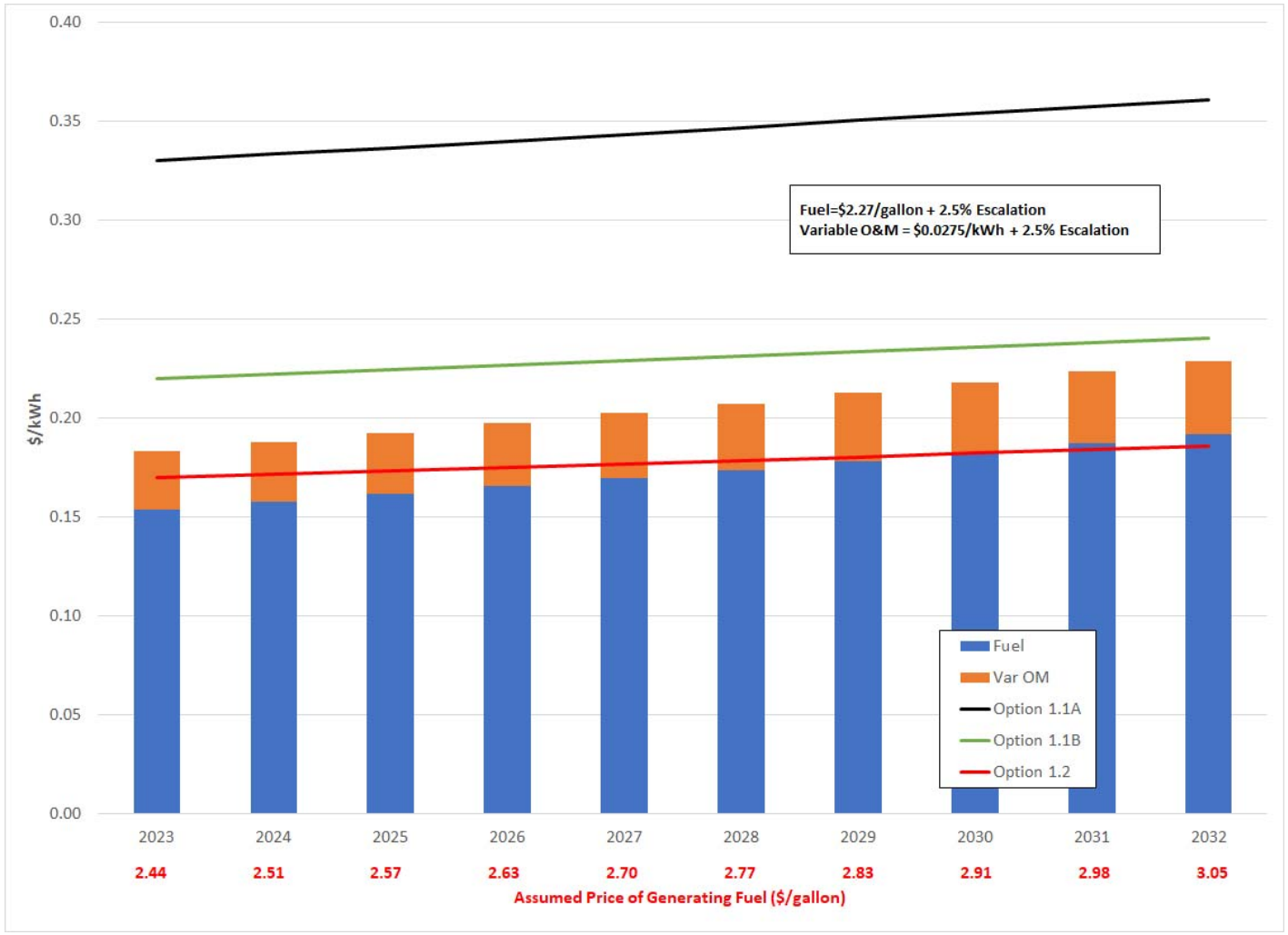
- Prices in offer are at the Delivery Point
- Losses are incurred from there to the customers' meters
- Therefore, price to customer will be slightly higher (4% or so)
- These losses are incurred with or without the Project
- Analysis performed herein is based at the distribution level (prior to losses)

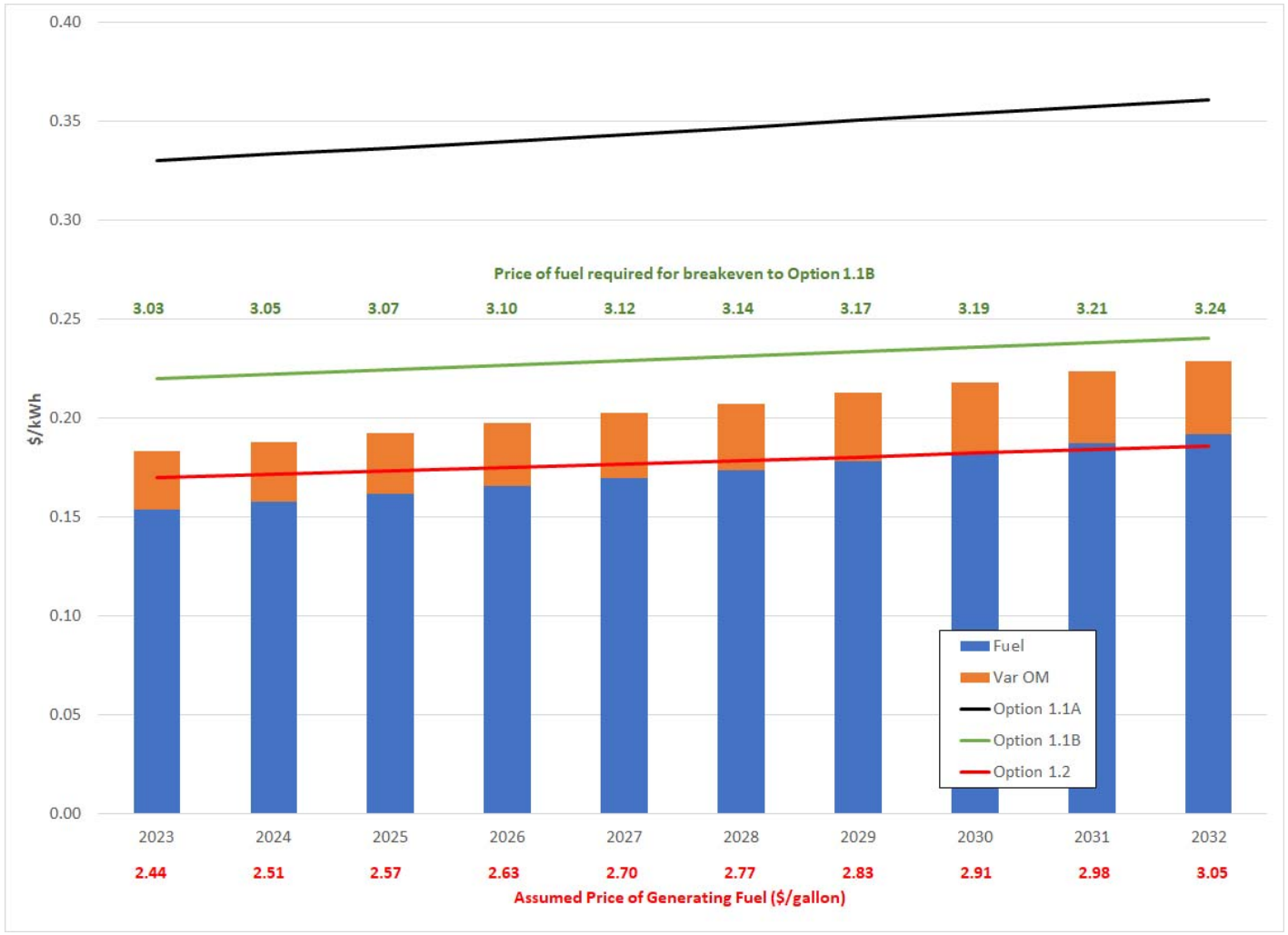
How Does It Compare to Generating Costs?

- Because of push for immediate commitment on the 18 MW resource, focus will be on Options 1.1 and 1.2
- Discussions with processors are being initiated to determine their interest
- Comparison should be made against City's variable cost of generation
- Variable cost
 - Fuel
 - Overhauls
 - Lube oil, etc.
 - Some permitting expenses
 - Miscellaneous other

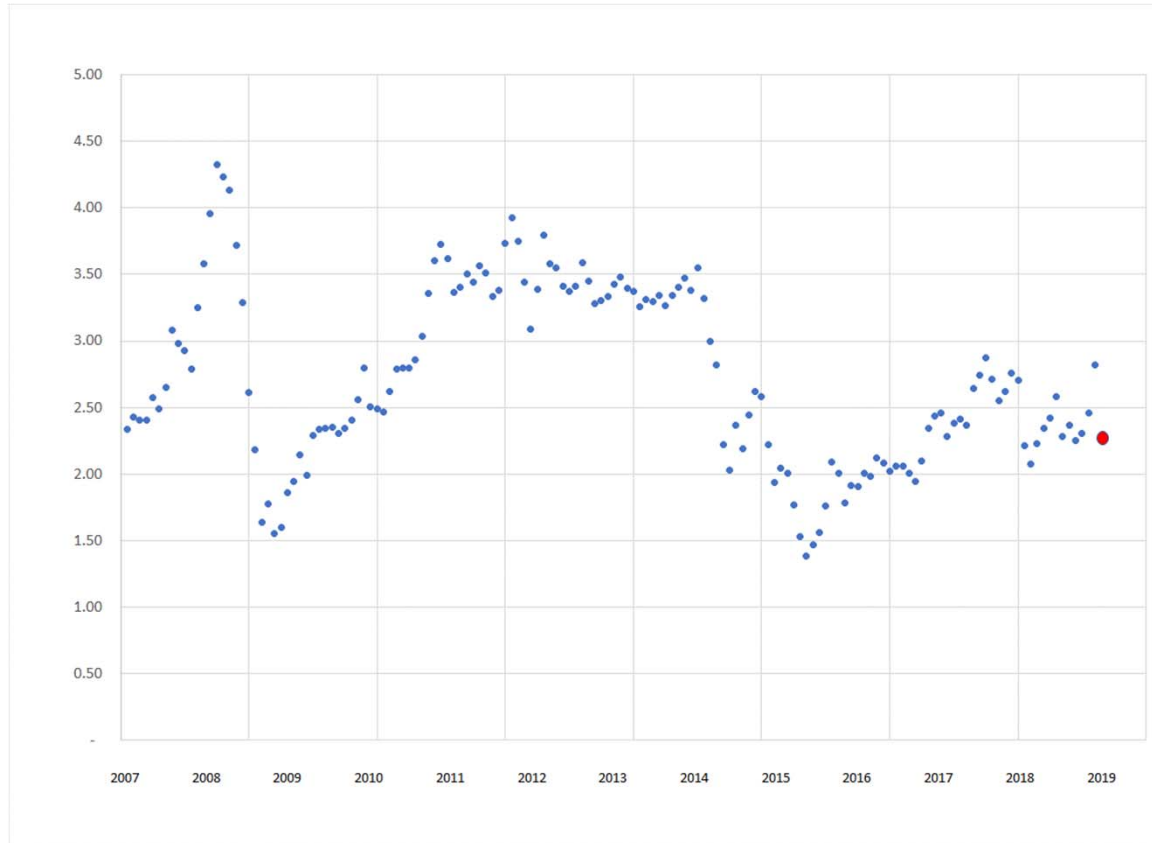
Current Costs

- Fuel
 - Cost: \$2.27/gallon (average Dec 2019 price)
 - Generating Efficiency: 15.9 kWh generated/gallon
 - Cost: \$0.148/kWh
- Variable O&M
 - \$0.025 – 0.030/kWh
- Total: \$0.173 – 0.178/kWh

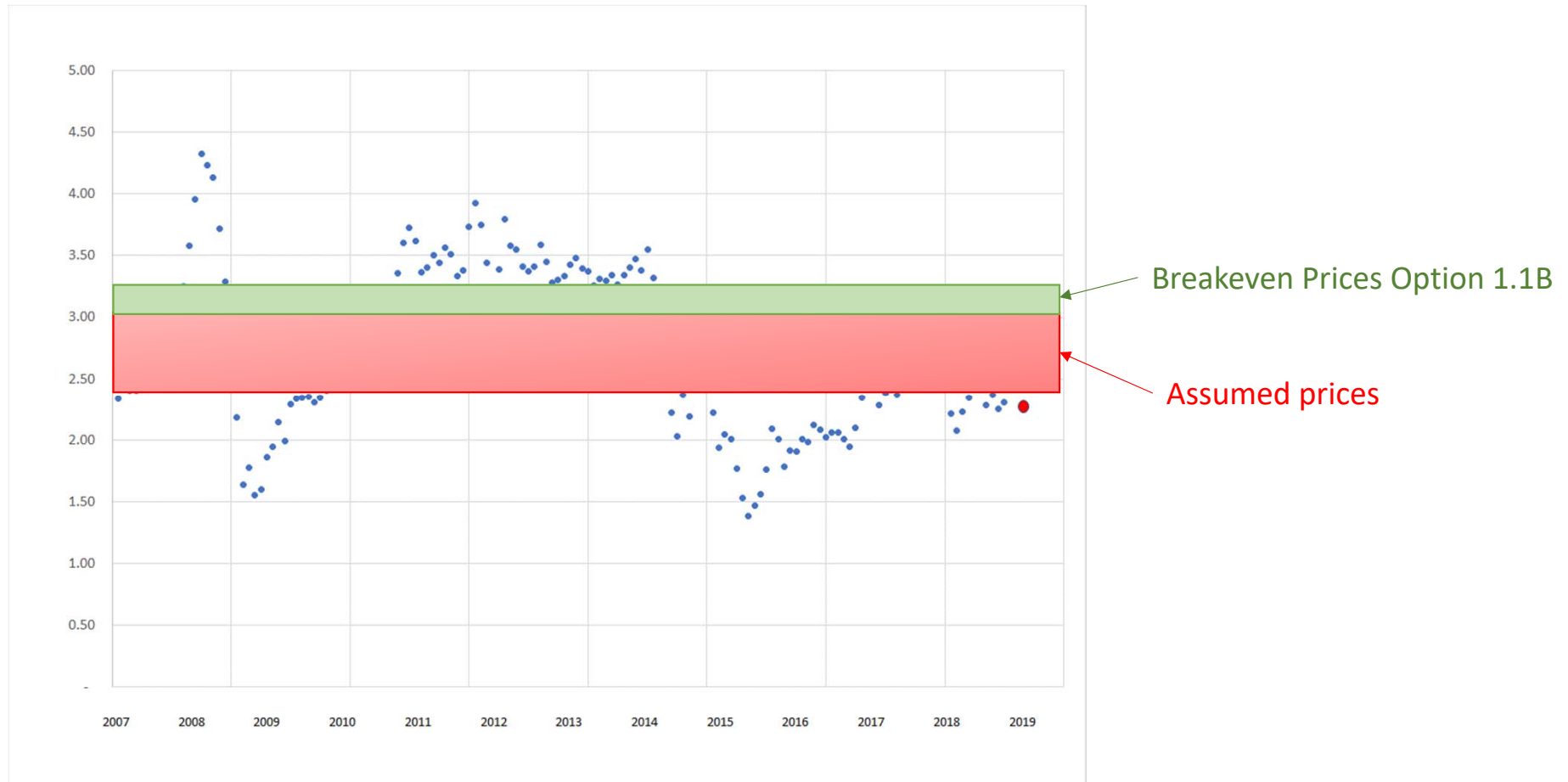




Historical Fuel Prices



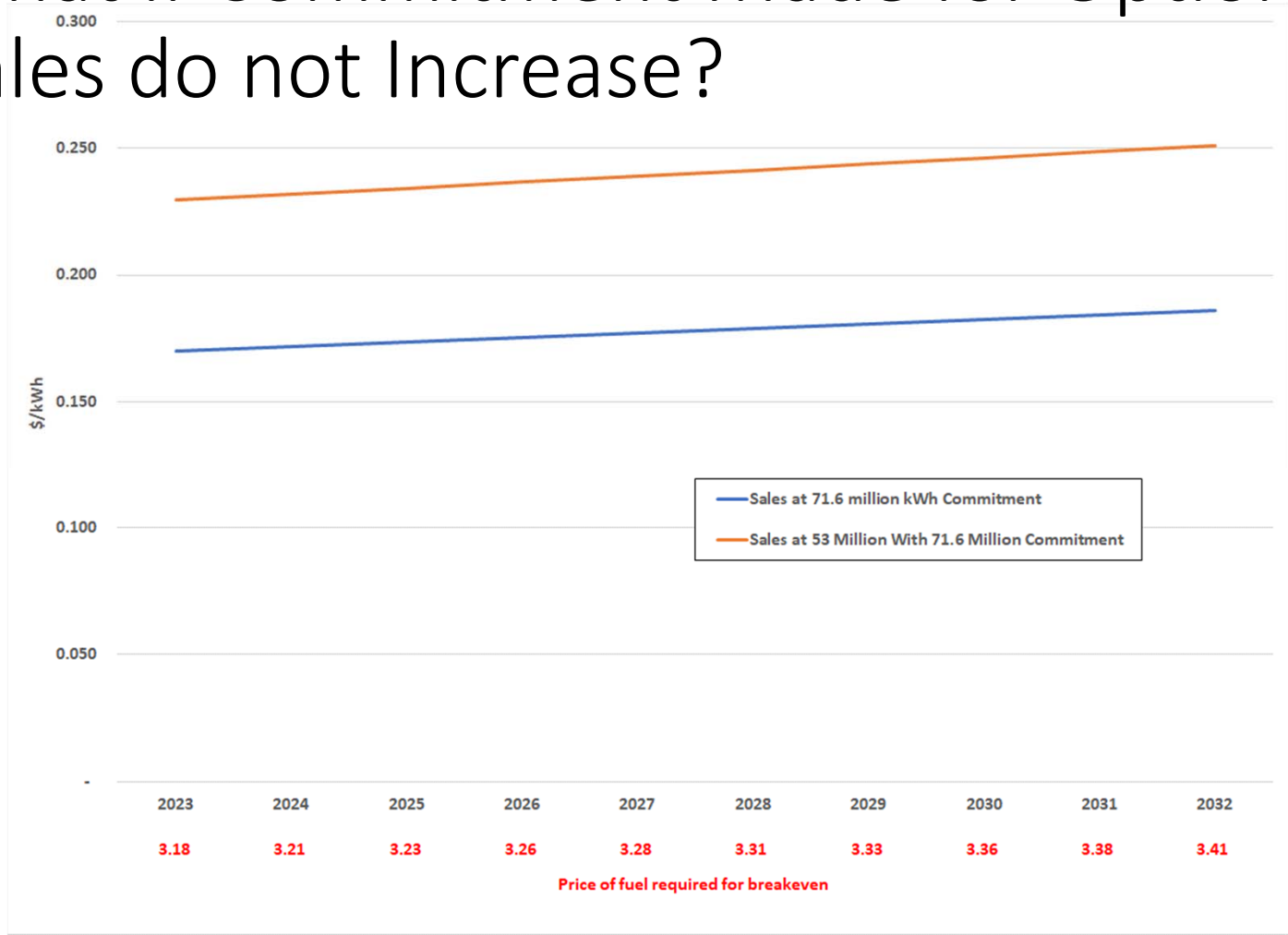
Historical Fuel Prices vs. Assumed Fuel Prices



How Do Sales Affect Costs

- Rate is expressed in \$/kWh, but that rate is based on a fixed minimum energy purchase
- If sales decrease below minimum, effective rate will increase
- For every 2 million kWh less in sales
 - Option 1.1B
 - Increases rate by \$0.009/kWh
 - Fuel equivalent = \$0.137/gallon
 - Option 1.2
 - Increases rate by \$0.005/kWh
 - Increases breakeven fuel price by \$0.078/gallon

What if Commitment Made for Option 1.2 but Sales do not Increase?



Other Issues

- Reliability concerns at first and City must run spinning reserve for a period of time
 - Paying for both fuel and Project energy
- Goal is to reduce use of City powerhouse
 - City will need to obtain supplemental heat for powerhouse

Heat

- Less expensive to transmit “heat” as electricity via a wire than fluid in a pipe
- Distribution system is already in place (wires to place of service)
- Could use air-to-air or air-to-water heat exchangers
- OCCP investigating costs and operating characteristics of systems
- Could provide additional electric loads which would decrease overall rate
- Not as effective at very low temperatures and back-up systems may need to be maintained

Questions/Comments