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RE: RPS Calculator Geothermal Cost Update Project Question

1. Please provide comments regarding the appropriateness of the reports used as a reference for adjusting the previous capital cost estimates in the RPS Calculator 6.0. Indicate if there are specific assumptions used in any of these reports that are inappropriate for estimating current geothermal project costs, along with how they should be adjusted.

GEA would suggest the reports (E3, IEPR, and NREL study) used to update the geothermal costs are inaccurate compared to actual cost information as discussed on the conference call. While interesting studies in their own right, these studies are estimations of geothermal costs and don't reflect the actual costs experienced in the sector as a whole. Therefore, to take these three reports and draw conclusions on the entire sector is grossly inaccurate.

With geothermal modeling, project details are often resource specific. It's always more accurate to use historical data points rather than estimated or modeled data points. Therefore, GEA and its member companies strongly recommends the CPUC place more weight on actual, historic cost numbers rather than try to collect modeled or estimated data points. As discussed later in this letter, the median capital costs for 21 binary plant plants built in the US appears to be ~$4,060/kW.

As the CPUC is aware, the geothermal power sector is smaller than our friends in solar and wind. Therefore, technology and information does not change as rapidly as our fellow clean technologies. Site specific information that is 5 or 10 years old is not necessarily incorrect when vetted appropriately to reflect a realistic project.

For site specific comments see Table 1 & 3, 5 & 6. Generally, factors such as economies of scale, plant efficiency, resource temperature or pressure, and reservoir depth, all have an impact on a project's economics.

In brief, GEA would suggest making the following four changes to the RPS calculator assumptions.

i. Edit Capital Costs. For many fields in the west the calculator listed costs are extraordinary high. While data shows on a rare occasion a field might be built for $9-10,000/kW, these projects are extremely rare and not in the normal range of capital costs. It would be very unusual for a company to build a geothermal power plant for greater than $5-7,000/kW unless power prices were substantially higher than they currently are. See Table 1 & 3, 5 & 6 for location specific comments.

ii. Reduce O&M. Most modeled and factual data points on O&M costs show $260/kW-yr is too high for geothermal operating costs. This value appears to be unusually high compared to actual data from typical facilities that are operating today. Geothermal power's O&M costs are typically in the $120-$220/kW-yr range, but vary with power plant size. In Table 2 below, GEA attached a few actual and commonly used model assumptions for O&M costs. O&M costs don't carry the same difficulties to model/estimate as overall plant capital costs.

iii. Increase Capacity Factor Value. The typical modeled figure for capacity value for geothermal power used by Dept. of Energy and other sources is 90+%. Normally capacity factors used for geothermal modeling have 'net capacity' or 'design capacity' in the denominator since using nameplate capacity in the denominator artificially deflates geothermal power's true output. For capacity factor GEA recommends using the same value as the Energy Information Administration of 92% [1] or DOE's GETEM model uses a 95% value to estimate LCOE.[2]

iv. Change Project Size. A typical installed capacity of a plant today ranges from 25 MW to 49.9 MW. Depicting geothermal power's installed capacity in 100 MW increments is an unrealistic assumption. Cal Energy does have two large licensed projects that exceed 50 MW however, the remaining resources will likely be brought online in 25-49.9 MW increments through 2030 and beyond.

v. Extend the Financing Term. Geothermal power plants typically have PPAs with 25-30 year length. Typical debt financing will therefore be 22 years (in the case of a 25 year PPA term), or 27 years (in the case of a 30 year PPA term).

2. Many stakeholders commented that geothermal capital costs are very site specific; this site-to-site variability was reflected in the RETI 1.0 and RPS Calculator 6.0 estimates originally performed by GeothermEx. Given the unique features of each project in the RPS Calculator, are the relative capital cost differences between projects still reasonable? If not, please indicate which RPS Calculator projects may face lower or higher costs due to specific resource or development issues.

Yes, having site specific costs are reasonable, however they must be adjusted with care. Please see attached table for specific comments. While conventional wisdom from a decade ago said out-of-state, low -temperature binary projects were more expensive, historical data of actual construction costs demonstrates that costs are less than conventional wisdom. These projects appear no more expensive in the US than a flash or dry steam project.

In Nevada, few of the costs in the CPUC model reflect actual projects. As historical tax data shows, projects built in Nevada over the last decade do not fall in the ranges built into the model for NV resources. Many are substantially lower, indicating a revision to the Nevada capital costs and multipliers is likely in order. These lower capital costs would also extend to all of the other states the CPUC uses in their model that have similar resource characteristics. Capital costs for recently constructed projects in Idaho and Oregon noted in Table 1 also fall well below the ranges modeled by the CPUC.

3. Are the costs in the reports used in the recent cost updates more applicable to a subset of the locations or project types currently represented in the RPS Calculator?

The values currently listed for some resources are extraordinarily high and are clearly not economic. Generally, any field with capital costs estimated above $8,000/kW are not economic and therefore would not be built. See actual, historical information provided as an attachment to this letter.

4. What other data sources are available to help update the costs of existing resource potential currently represented in the RPS Calculator? Are they publicly accessible? Do they provide site-

[1] https://www.eia.gov/forecasts/aeo/electricity_generation.cfm

[2] http://energy.gov/eere/geothermal/geothermal-electricity-technology-evaluation-model

specific, forward-looking information? If other references should be considered, please provide the source data, information on how the data was compiled and reviewed, along with an explanation for the differences with the sources outlined above.

GEA recommends the CPUC place greater weight on historical or reported tax data from past projects rather than a hypothetical modeled project. Even data from projects that are from 5 or 10 years ago are still useful. With the exception of inflation and a few minor reductions in O&M costs, development and drilling costs have not significantly changed over the last decade or so. *Simply put, sites* that were originally estimated at some cost before the version 6.1 increase of 31%, and are likely still closer to the original cost to build new Greenfield project on that site.

Although, many of the original costs are also inflated in the calculator. In short, a serious revision to some of the resource specific cost assumptions is in order. Table 1 below compares costs of actual projects built to what a new project on the same site is estimated to cost by the CPUC calculator. There are only two instances where costs were higher than the range modeled by the CPUC calculator, most were significantly below. Historical data derived from publically available tax data attached to this document shows actual costs of geothermal power plants have stayed relatively constant over time. However, fields that are greater than $8,000/kW+ to develop are also uneconomic. No established developer would build a project that cost that amount. GEA research shows that the most expensive recent geothermal project that was close to $10,000/kW resulted in bankruptcy, and it is an outlier.

Table 1: Comparison Historical Data VS. CPUC Modeled Values

	Historical Cap Cost ($2015/kW)	CPUC modeling		Does the historical cost fall inside the modeled range?
		low	high	
East Mesa -86	$4,645	$10,058		No
SIGC/Heber	$4,171	$6,348		No
ORNI 18 LLC (North Brawley)	$7,050	$6,286		High
Mammoth-Pacific, L.P.	$2,540	N/A		N/A
Puna Geothermal Venture	$4,045	N/A		N/A
Raft River	$4,319	$5,856	$10,881	No
Steamboat flats	$3,097	$6,448	$18,437	No
NGP Blue Mountain I LLC	$5,920	$6,448	$18,437	No
Enel Salt Wells, LLC	$3,578	$6,448	$18,437	No
Enel Stillwater, LLC	$3,368	$6,448	$18,437	No
Beowawe Binary, LLC	$4,538	$6,448	$18,437	No
Tuscarora	$4,060	$6,448	$18,437	No
USG Nevada LLC (San Emido)	$4,027	$6,448	$18,437	No
Dixie Binary, LLC	$2,443	$6,448	$18,437	No
Patua	$9,470	$6,448	$18,437	Yes
McGuinnes Hills Phase I & II	$3,831	$6,448	$18,437	No
Don A. Campbell Phase I & II	$4,231	$6,965	$9,894	No
Tungsten	$3,896	$6,448	$18,437	No

USG Oregon LLC (Neil Hot Springs)	$5,192	$6,406	$7,931	No
Thermo No. 1 BE-01, LLC	$10,411	$5,671	$10,249	High
Cove Fort	$3,524	$5,671	$10,249	No

5. Recent PPA information has been provided to the Commission by stakeholders, with statements that pricing in the levelized range of $75-100/MWh is reasonable, although much of the information is for older projects. Assuming that these historic levelized PPA prices reflect a 30 percent ITC or 1603 cash grant, the current capital and operating costs (not including interconnection costs or property taxes) in the Calculator for California will produce an LCOE at the high end of this range.

a. Does the PPA information that has been provided reflect future, greenfield project costs? Provide examples of recent PPAs signed in California or other locations salient to the analysis that reflect development conditions similar to those as the projects in the RPS Calculator.

Yes, future projects will be similar to these historical ones. Ormat, Calpine, and Cal Energy all have recently signed PPA data in California at or around the rate future PPAs will be signed for as well.

b. Aggregated data from the 2014 California IOU RFOs show a weighted, levelized PPA average of $96.38/MWh. Would estimating a capital cost that leads to an average PPA price at this level be acceptable for the RPS Calculator project estimates?

Yes, as an interim solution this would be acceptable knowing that geothermal developers typical want a 15-25% margin between LCOE and PPA price to manage resource risk and maintain the long-term viability of the project. A study from Department of Energy that reverse engineered LCOE values from public PPA data estimated the LCOE's for geothermal projects built in the last decade ranged from roughly $40 to $80/MWh.[3] The LCOE modeled by CPUC in its analyses should reflect current market prices for PPA's around the $90-100/MWh range. Generally, modeling a LCOE for hypothetical projects that is higher than the current market price for a PPA does not make sense.

6. The ability of geothermal power plants to provide fast ramping needs and ancillary services has recently been mentioned at various statewide renewable energy planning meetings. Since this type of performance has not historically been included in the design of geothermal facilities, should the additional cost to provide these services be added to the capital or operating cost? If so, how much should be added?

GEA encourages the CPUC to think about how geothermal power's ancillary services and ramping abilities can be properly valued in a 2030 grid. Geothermal is one of the few renewable resources that can provide all the same ancillary services as a coal or gas plant but with negligible carbon dioxide emissions. This services include ancillary services like regulation, load following, energy imbalance, spinning reserve, non-spinning reserve, and replacement or supplemental reserve, capacity value, power regulation, and/or frequency response.

[3] https://pangea.stanford.edu/ERE/db/GeoConf/papers/SGW/2016/Hernandez1.pdf

Different facilities/resource differ in their ability to perform different fast ramping and ancillary services. It's clear from Jim Caldwell and the NREL/Low Carbon Grid Studies'[4] work geothermal provides numerous benefits to the grid as a baseload resource. Additionally, there are binary resources that with the right financial incentives or compensation could be made flexible today, with negligible reinvestment.

Some of these resources outlined below should provide the CPUC with answers to the additional capital and operating costs required to run geothermal plants flexibly. Generally it is greatly dependent on the technology type and resources characteristics, however the industry is under consensus this is an economic question not a technical question for some power plants.

Important Sources:

- US Geothermal' s letter to CEC (attached)
- "Flexible Opportunities with Geothermal Technology: Barriers and Opportunities" by Matek
- CEC Workshop in late January
- "Automatic Generation Control and Ancillary Services" by Nordquist et al.

7. What are representative capital costs, O&M costs, capacity factors, and plant sizes for the resources in the RPS Calculator, listed in Table 5 and Table 6 below:

O&M Costs

Below are 5 examples of O&M costs that are lower than the ~$260/kW-yr used currently by the calculator. Two examples are straight from company SEC filings and three examples from respected energy models. One of the biggest variables in determining O&M costs is staff compensation. Geothermal power plants are incredibly employment intensive to operate. They require 1.17 FTE persons / MW to operate. For example, comparing US Geothermal' s O&M costs listed in their 2015 versus their 2014 or 2013 10k fluctuate significantly around $219/kW-yr. In addition, other factors that can impact O&M costs include the plant operations, the influence of weather/temperature, and timing of major maintenance activity.

Table 2: O&M Costs

Modeled Sources	*$/kW-yr*	*Notes*	*Source*
Energy Information Administration	113	"The [113/kW-yr] represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located."	https://www.eia.gov/forecasts/aeo/assumptions/pdf/electricity.pdf
Low Carbon Grid Study	120		http://lowcarbongrid2030.org/
GeothermEx	176*	2.0¢ / kWh for a 5 MW plant to 1.4¢ / kWh for a 150 MW plant	http://www.geothermal-energy.org/pdf/IGAstandard/SGW/2004/Sanyal.pdf
Operating Plants			

[4] http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN211028_20160413T134844_Liz_Anthony_Comments_The_Value_of_Salton_Sea_Geothermal_Develop.pdf

Ormat's Eastern Nevada Plants	137	NV binary: Tuscarora(18MW), Jersey Valley(10MW), McGinness Hills (72MW), Don Campbell (38MW)	http://investor.ormat.com/Cache/1500085929.PDF?Y=&O=PDF&D=&fid=1500085929&T=&iid=4087066
US Geothermal Fleet Average	219	US Geothermal fleet Average of San Emidio (10MW), Neal Hot Springs(22MW), Raft River (13MW)	SEC filing: 2015 10k Smaller plant sizes generally have higher operating costs. https://www.sec.gov/Archives/edgar/data/1172136/000106299316008266/form10k.htm

*For a 30 MW plant and adjusted to 2015 US dollars from $145 in $2004/kW-yr.

Capital Costs

Data of actual projects collected by GEA shows that capital costs historically have been significantly lower than presented in the CPUC modeling. This data represents 21 binary geothermal projects spread across the West. GEA found there is little correlation between project cost and the year a project was built, indicating that it would be incorrect to presume costs rose or fell for binary projects over the last two decades. This data originates from actual construction costs found in SEC filings, academic papers, and tax information reported to federal and state governments. This data is fully listed in the Appendix by resource.

Figure 1: U.S. Binary Capital Costs

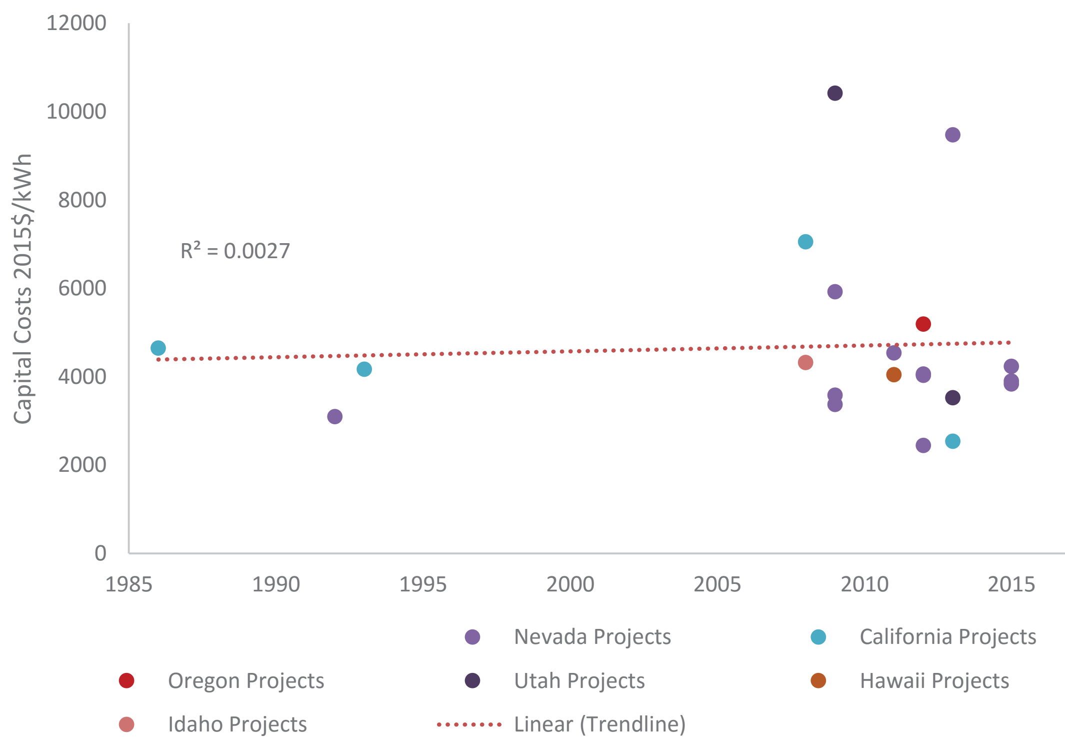

Table 3: Summary Statistics

Summary Statistics	Cap Cost ($2015/kW)
Mean	4,684

Median	4,060
Max	10,411
Min	2,443

In short, Table 3 shows the summary statistics GEA found for 21 geothermal power projects built since 1985. See Table 4, 5, & 6 for site specific data. For flash and dry steam resources, GEA could not identify enough historical data points to draw any conclusions. However, the five historical capital costs GEA could identify are listed below. It's important to point out Entingh and McVeigh in 2003 concluded "Capital cost for geothermal technologies are much lower than 1985" after analyzing a mix of international and U.S. high temperature projects.

Table 4: Historical U.S. High-Temperature Project's Capital Costs

High Temperature, Flash & Dry Steam Costs	*Online Year*	*Total Investment*	*Net Power (kW)*	*Cap Cost $/kW - original*	*2015 dollars*	*Source*
Salton Sea - 88	1988	$134,200,000	51000	$2,632	$3,623	Entingh and McVeigh 2003
Dixie Valley - 88	1988	$140,000,000	60000	$2,333	$3,211	Entingh and McVeigh 2003
Steamboat hills	1988	$15,000,000	11000	$1,364	$1,877	Entingh and McVeigh 2003
Roosevelt	1984	$38,000,000	20000	$1,900	$2,615	Entingh and McVeigh 2003
Hudson Ranch/Featherstone	2012	$340,289,813	49900	$6,819	$7,039	1603 Cash Grant

Note for 1603 Cash Grant data, the reported value in government data was assumed to be 30% of the projects costs. GEA extrapolated the total project costs for the electricity projects by dividing the payment value by .3 to find the total project investment. Then dividing total project investment by net output. This value includes all "property that is integral to a geothermal facility includes equipment that transports geothermal steam or hot water from a geothermal deposit to the site of ultimate use. This includes components of a heating system, such as pipes and ductwork that distribute within a building the energy derived from the geothermal deposit and, if geothermal energy is used to generate electricity, includes equipment that transports hot water from the geothermal deposit to a power plant."

Recommended References and Readings

U.S. Dept. of Treasury. 2015. "1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits." *1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits*. October 5. https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx.

Entingh, Daniel, and James McVeigh. 2003. "Historical Improvements in Geothermal Power System Costs." *Geothermal Resources Council Transactions* 27: 533–37. http://pubs.geothermal-library.org/lib/grc/1021966.pdf

Hernandez, Kevin, Christopher Richard, and Jay Nathwani. 2016. “Estimating Project LCOE – an Analysis of Geothermal PPA Data.” In 41st Workshop on Geothermal Reservoir Engineering. Stanford, California: Stanford University. https://pangea.stanford.edu/ERE/db/GeoConf/papers/SGW/2016/Hernandez1.pdf.

Nevada Governor’s Office of Energy. 2016. “Renewable Energy Tax Abatement Projects.” *Nevada Governor’s Office of Energy*. http://energy.nv.gov/Programs/Renewable_Energy_Tax_Abatement_Projects_2016/.

Sanyal, Subir. 2004. “Cost Of Geothermal Power And Factors That Affect It.” In *Twenty-Ninth Workshop on Geothermal Reservoir Engineering*. Stanford, California: Stanford University. http://www.geothermal-energy.org/pdf/IGAstandard/SGW/2004/Sanyal.pdf.

Hance, Cedric Nathanael. 2005. “Factors Affecting Cost of Power: - Factors Affecting Cost of Geothermal Power Development.” Washington DC: Geothermal Energy Association. http://geo-energy.org/reports/Factors%20Affecting%20Cost%20of%20Geothermal%20Power%20Development%20-%20August%202005.pdf.

Table 5: GEA comments on Site Specific Resources

Name	*State*	*Electrical Zone: Super CREZ or WREZ*	*Capital Cost $/kW*	*GEA Comment to CPUC*
Geysers (incl Calistoga & Clear Lake [Sulphur Bank])	CA	Sonoma County	$ 5,662	
Long Valley - M-P Leases	CA	Mono County (Partial)	$ 5,416	
Mt Shasta (incl. areas around Lassen: Growler & Morgan)	CA	Siskiyou County (Partial)	$ 6,098	
Brawley (sum of Brawley, East Brawley, and South Brawley)	CA	Imperial North	$ 6,286	
Heber (incl. Border, Mount Signal, & Superstition Mountain)	CA	Imperial South	$ 6,348	Substantially too high. GEA research shows adjusted for inflation an Heber project built in 93 was constructed for ~$4,172/kW
Truckhaven (incl. San Felipe prospect)	CA	Imperial North	$ 6,499	
Medicine Lake	CA	Round Mountain - A	$ 6,499	
Randsburg	CA	Kramer	$ 6,138	
Salton Sea (incl. Niland & Westmoreland)	CA	Imperial North	$ 7,061	
Honey Lake	CA	Lassen North	$ 6,041	
Lake City / Surprise Valley	CA	Round Mountain - A	$ 7,488	
East Mesa (incl. Dunes & Glamis)	CA	Imperial South	$ 10,058	Substantially too high. GEA research shows adjusted for inflation an East Mesa project built in 86 was constructed for ~$7,300/kW
UT_WE_G_2	UT	UT_WE	$ 5,671	
OR_SO_G_3a	OR	OR_SO	$ 6,406	
NV_WE_G_3	NV	NV_WE	$ 6,965	
ID_EA_G_3a	ID	ID_EA	$ 5,856	
ID_EA_G_3c	ID	ID_EA	$ 6,814	
ID_EA_G_3b	ID	ID_EA	$ 6,470	
BC_EA_G_6	BC	BC_EA	$ 8,621	

BC_NE_G_6	BC	BC_NE	$ 8,322	It’s expected binary projects in British Columbia, Canada, will costs similarly to a US project in Oregon, Nevada, or Idaho. These values for BC are significantly too high.
BC_NW_G_6	BC	BC_NW	$ 8,405	
BC_NW_G_7	BC	BC_NW	$ 10,411	
BC_SE_G_6	BC	BC_SE	$ 8,400	
BC_SO_G_6	BC	BC_SO	$ 8,596	
BC_SW_G_6	BC	BC_SW	$ 8,760	
BC_WC_G_3	BC	BC_WC	$ 6,026	
BC_WC_G_4	BC	BC_WC	$ 6,162	
ID_EA_G_5b	ID	ID_EA	$ 9,879	Data for Idaho is more limited. The most recent completed project in 2008 in Idaho, adjusted to 2015 dollars, cost US Geothermal about $4,300/kW. It is likely similar binary projects in Idaho will cost around this amount. No developer would develop a project for these estimated costs.
ID_EA_G_4	ID	ID_EA	$ 9,019	
ID_EA_G_5a	ID	ID_EA	$ 9,966	
ID_SW_G_5a	ID	ID_SW	$ 10,741	
ID_SW_G_3	ID	ID_SW	$ 6,830	
ID_SW_G_5b	ID	ID_SW	$ 10,881	
NV_EA_G_5	NV	NV_EA	$ 9,894	The resources listed for Nevada are substantially too high! Historical data shows projects built in Nevada normally cost less than $6,000/kW. With only one in the 16 GEA could identify costing ~$9,000/kW. GEA would recommend reducing the cost of these fields to a cost that reflects actual historical data. GEA determined from capital cost figures reported in tax documents the median project in Nevada cost on average $4,371/kW in 2015 dollars.
NV_NO_G_3a	NV	NV_NO	$ 6,448	
NV_NO_G_3c	NV	NV_NO	$ 6,932	
NV_NO_G_4b	NV	NV_NO	$ 7,754	
NV_NO_G_5b	NV	NV_NO	$ 10,119	
NV_NO_G_7	NV	NV_NO	$ 15,559	
NV_NO_G_3b	NV	NV_NO	$ 6,861	
NV_NO_G_4a	NV	NV_NO	$ 8,064	
NV_NO_G_5a	NV	NV_NO	$ 9,878	
NV_NO_G_6	NV	NV_NO	$ 13,267	
NV_NO_G_8	NV	NV_NO	$ 18,437	
NV_WE_G_4	NV	NV_WE	$ 8,553	
NV_WE_G_5	NV	NV_WE	$ 9,894	
OR_SO_G_3b	OR	OR_SO	$ 6,568	The historical data point GEA has for Oregon is the only commercial power plant built to date; the 22 MW Neal Hot Springs project which was built for ~$4,962/kW. Its likely similar binary projects in Oregon will cost around this amount.
OR_SO_G_5	OR	OR_SO	$ 9,857	
OR_SO_G_4	OR	OR_SO	$ 7,734	

OR_WE_G_3	OR	OR_WE	$ 5,990	
OR_WE_G_4	OR	OR_WE	$ 7,931	
UT_WE_G_3	UT	UT_WE	$ 6,597	Data for Utah is more limited. GEA does have two historical data points. GEA estimates the two most recent projects built in Utah were built for $10,400/kW and $3500/kW. The newer project was built for the reduced amount and newer projects are likely to be cheaper than the 2009 Thermo facility.
UT_WE_G_4	UT	UT_WE	$ 8,116	
UT_WE_G_5	UT	UT_WE	$ 10,249	

Table 6: Capital Costs of U.S. Binary Geothermal Projects

Project	*State*	*Online Year*	*Reported Project Investment/Cost*	*kW - Net*	*Reported Dollars*	*Cap Cost ($2015/kW)*	*Notes/Source*
East Mesa -86	CA	1986	81,000,000	24000	$3,375.00	$4,645.37	Entingh and McVeigh 2003
SIGC/Heber	CA	1993	100,000,000	33000	$3,030.00	$4,170.51	Entingh and McVeigh 2003
ORNI 18 LLC (North Brawley)	CA	2008	409,902,737	64000	$6,404.73	$7,049.86	1603
Mammoth-Pacific, L.P.	CA	2013	18,721,583	7500	$2,496.21	$2,539.50	1603
Puna Geothermal Venture	HI	2011	46,070,477	12000	$3,839.21	$4,045.13	1603
Raft River	ID	2008	51,000,000	13000	$3,923.08	$4,318.65	US Geothermal 2008 10k
Steamboat flats	NV	1992	61,000,000	28000	$2,250.00	$3,096.91	Entingh and McVeigh 2003
NGP Blue Mountain I LLC	*NV*	2009	*219,139,083*	*39000*	*$5,618.95*	$5,919.66	1603
Enel Salt Wells, LLC	*NV*	2009	*72,214,383*	*20200*	*$3,574.97*	$3,578.24	1603
Enel Stillwater, LLC	*NV*	2009	*135,945,543*	*40400*	*$3,364.99*	$3,367.99	1603
Beowawe Binary, LLC	*NV*	2011	*5,599,773*	*1300*	*$4,307.52*	$4,538.26	1603
Tuscarora	NV	2012	73,000,000	18000	$4,055.56	$4,059.81	NV Tax data
USG Nevada LLC (San Emido)	*NV*	2012	*39,015,417*	*10000*	*$3,901.54*	$4,027.12	1603
Dixie Binary, LLC	*NV*	2012	*15,607,390*	*6500*	*$2,401.14*	$2,442.84	1603
Patua	NV	2013	275,200,000	30000	$9,173.33	$9,469.57	NV Tax data
McGuinnes Hills Phase I & II*	NV	2015	267,000,000	69700	$3,830.70	$3,830.70	NV Tax data