Opal Springs Hydropower Project

RAC

June 22, 2016

Energy Trust of Oregon

Summary

Project context

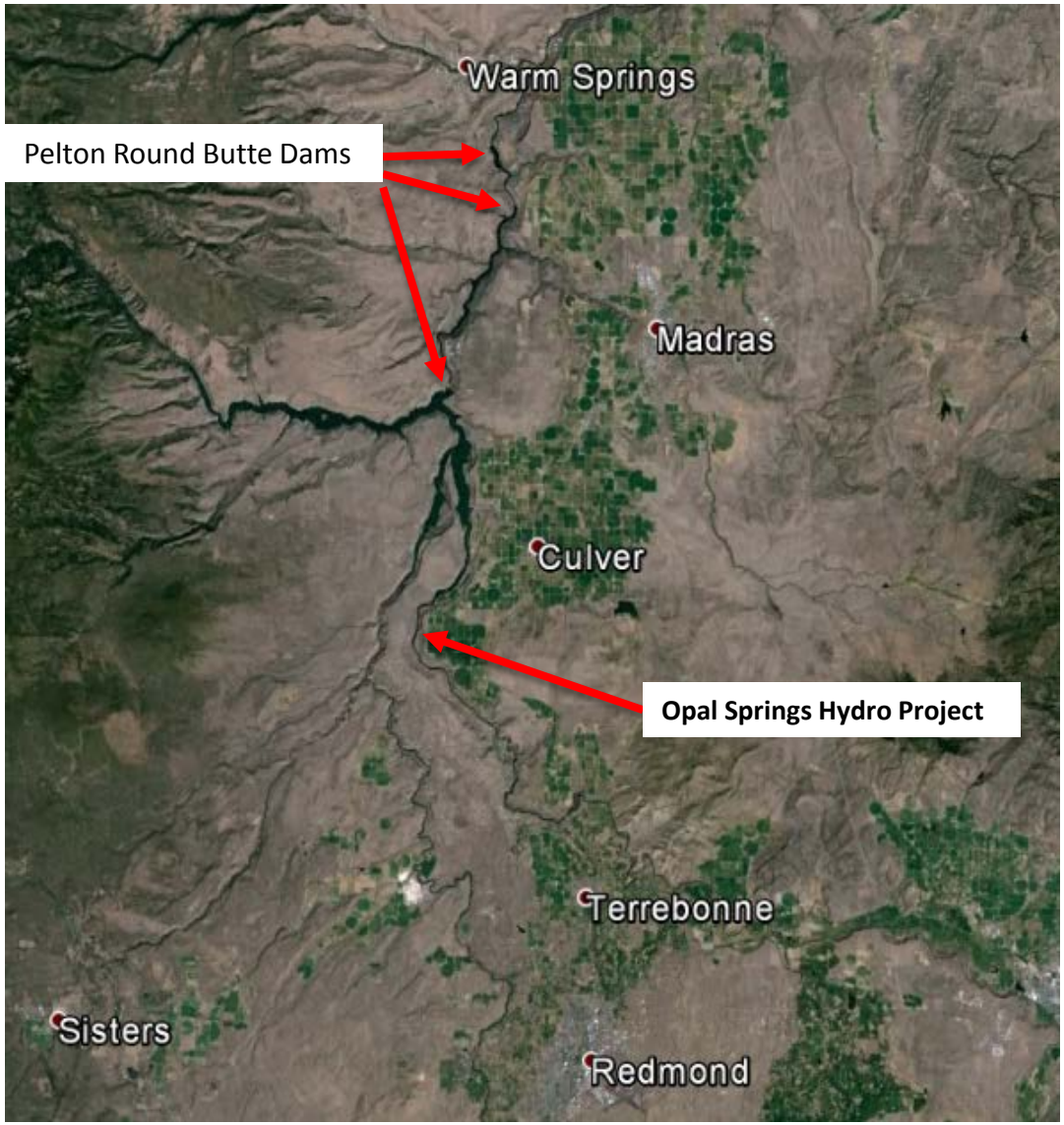
Detail about this project

Above-market cost evaluation

Proposed incentive and REC terms

Overall project summary

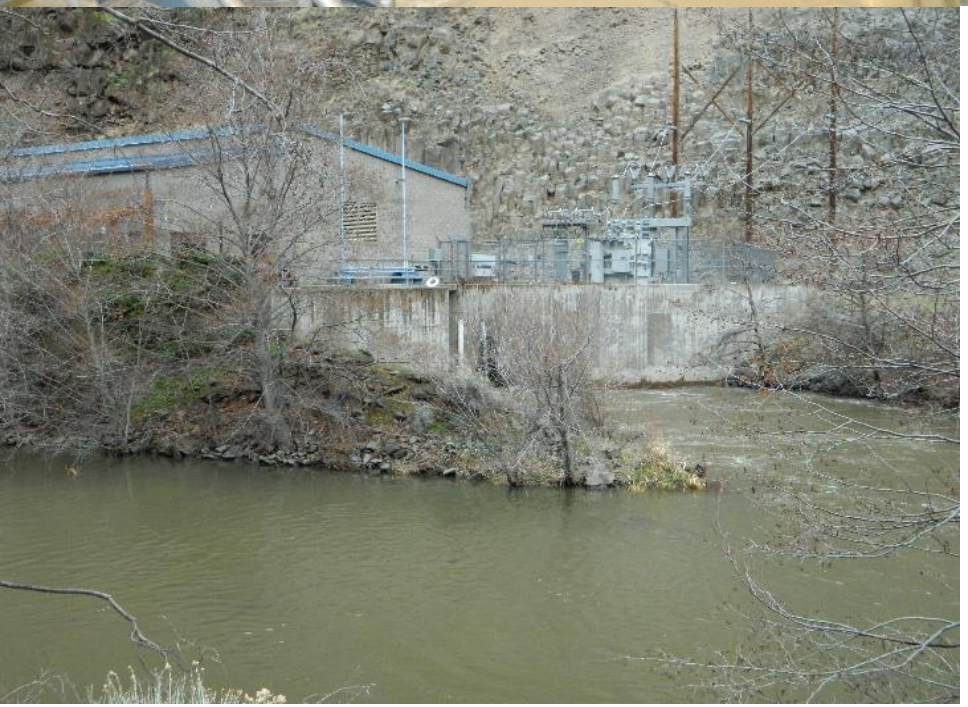
- Install inflatable weirs on existing dam, raising pool six feet
- Install fish ladder at dam (river right)
- Six feet of increased head will generate an additional ~3,227 MWh / yr.

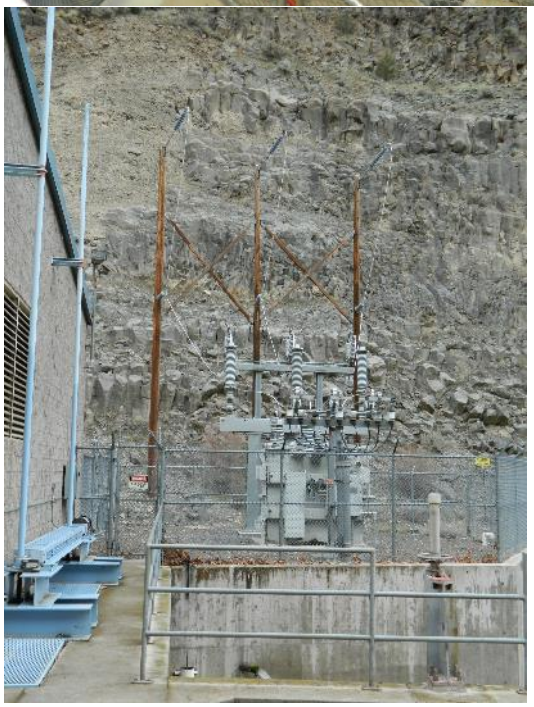


Project owner

- Deschutes Valley Water District – municipality
- Existing Hydropower Project (~28,000 MWh / yr.); PPA w/ PAC expires 12/31/2020
- Pelton-Round Butte fish passage – 2007
- FERC license → expires 2032
- 2012 Settlement Agreement

Obermeyer inflatable weir





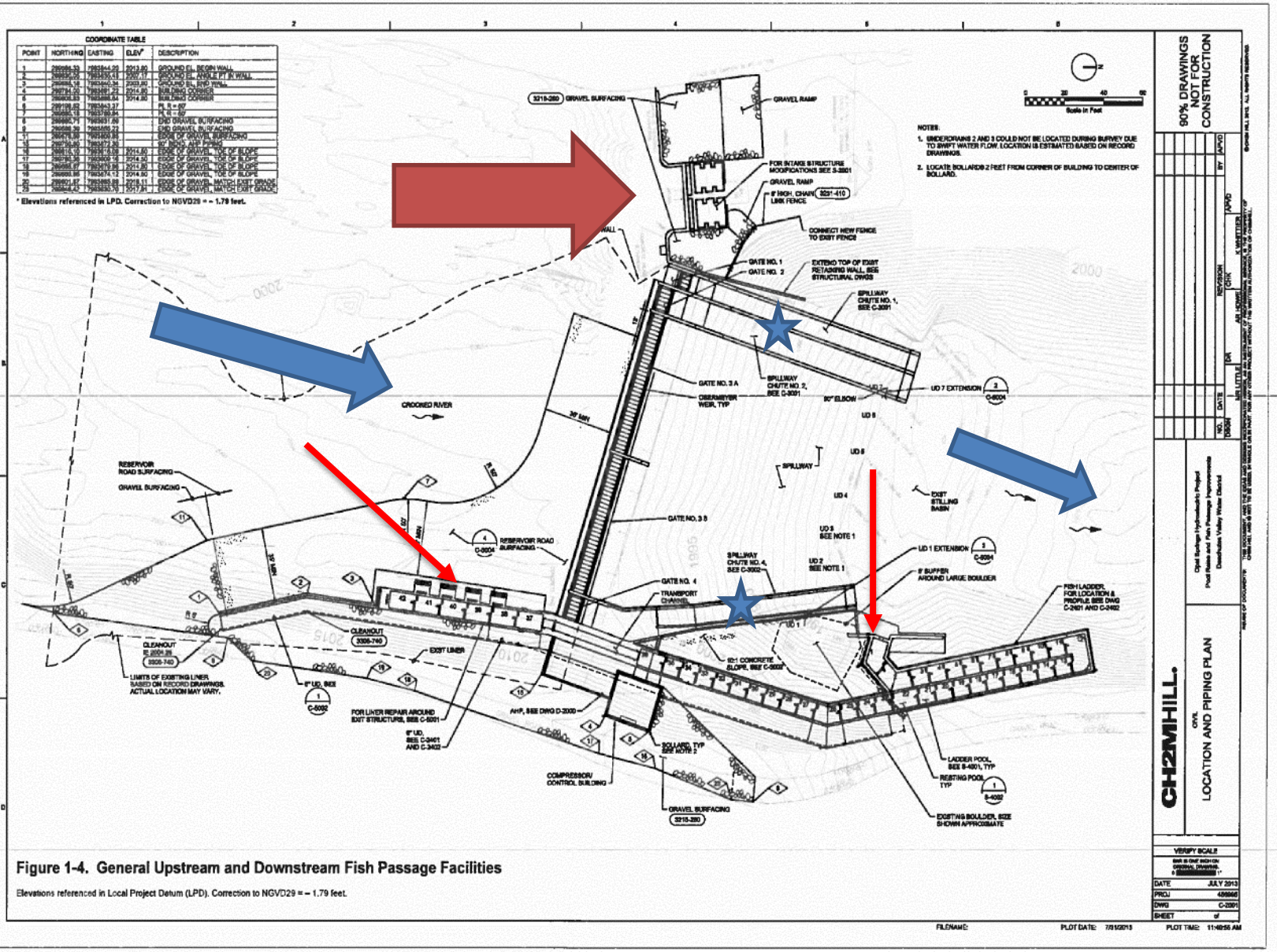


Figure 1-4. General Upstream and Downstream Fish Passage Facilities

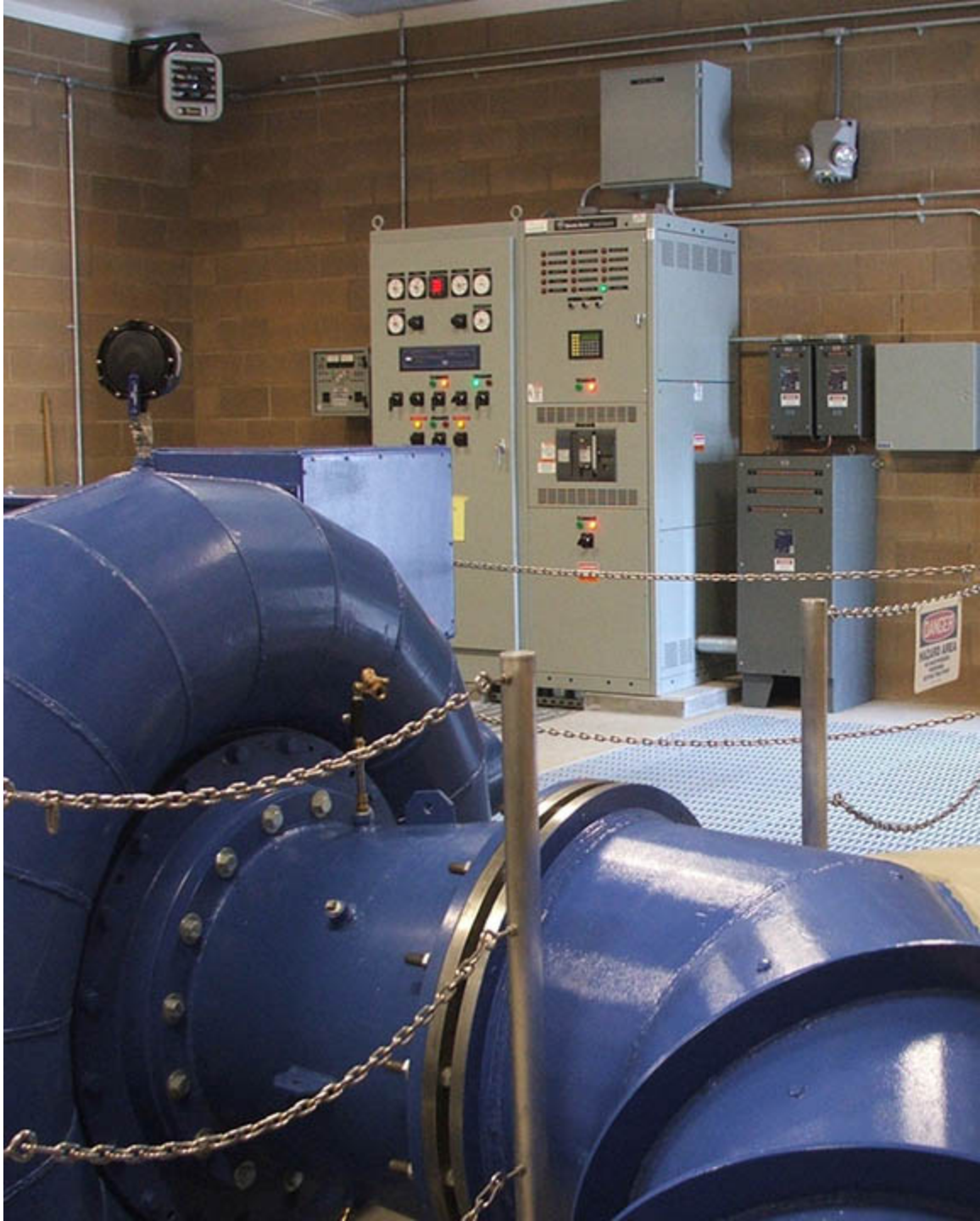
Elevations referenced in Local Project Datum (LPD). Correction to NGVD29 = – 1.79 feet.

Review points

- Basis for participation
- Site control
- Development and operational team expertise

Review points

- Energy assessment
- Energy conversion technology and estimated generation



Review points

- Permitting
- Interconnection
- Power purchase agreement

Review points

- Project revenues
- Project capital costs & operational and maintenance expenses
- Financing, grants, and incentives

Separating Out Project Costs

Development & Install Costs	Total Cost	Energy Costs	Notes
Fish ladder & spillways	$ 2,691,783	$ -	Deleted
Earthwork / dewatering	$ 1,370,747	$ 685,373	Reduced by 50%
Foundation / sediment removal	$ 55,391	$ 27,696	Reduced by 50%
Diversion dam / gates	$ 2,304,201	$ 1,152,101	Reduced by 50%
Powerhouse / wiring	$ 298,636	$ 298,636	Energy cost
Intake structure	$ 632,681	$ 632,681	Energy cost
Interconnection/Transmission	$ 150,000	$ 150,000	Energy cost
Dated construction estimate cost escalation (4% per year, two years)	$ 600,041	$ 324,465	Reduced by $275,576 directly related to fish passage
Total project development costs	$ 889,243	$ 444,622	Reduced by 50%
Energy Trust PDA	$ (191,134)	$ (191,134)	
Total upfront costs	**$ 8,801,589**	**$ 3,524,439**	

Grants

Grants	Total Grants	Energy Grants	Notes
ODFW - Fish passage, awarded	$ 1,200,000	$ -	Deleted
OWEB - Fish passage, awarded	$ 2,000,000	$ -	Deleted
Blue Sky - Energy, applied	$ 400,000	$ 400,000	Energy grant
Total	**$ 3,600,000**	**$ 400,000**	

Above-market cost

Project Financial Summary - Present Value Basis - Evaluated over 20 years	
Project Costs - Energy Only	
Total Design & Construction - Energy Only	$ 3,524,439
Grants - Energy Only	$ 400,000
Equity: Total Design & Construction - Grants	$ 3,124,439
Expenses	
NPV Total Project Expenses - Energy Only	$ 181,651
Total cost: Equity + Expenses	**$3,306,090**
Revenue	
NPV Revenues	$ 2,352,322
Above Market Cost: Total Cost - Revenues	**$ (953,768)**

Proposed incentive

Evaluation Criteria

Project Term:	20 Years at 8% discount rate
Above-Market Cost (NPV):	$953,768
Proposed Incentive:	$750,000
Payment Terms:	Two payments of $375,000
NPV Incentive	$668,724, 70% of AMC
REC Allocation:	64,540 total over 5 years (100% of expected generation)
REC Value:	$11.62 per REC
Energy Value:	$2.04 million per aMW

Comparison to past projects

Project	Cost per aMW
COID Juniper Ridge Phase 1	$ 652,028
Klamath Irrigation C-Drop	$ 1,228,154
Opal Springs Hydro	***$ 2,035,946***
Three Sisters Irrigation District	$ 2,825,806
Swalley Irrigation District	$ 2,916,985
Farmers Irrigation District (LDPP)	$ 3,767,742

Time line

- Construction contracting – summer 2016
- Final permitting – early 2017
- Construction mobilization – spring 2017
- PPA negotiation – 2016/2017
- Commissioning – November 2018

Conclusion

Questions?

Permitting

- Right-of-Way Permit to occupy additional BLM land
- Non-capacity amendment to DVWD's FERC license
- Water Quality Certification
- Existing Water Right Permit (S-47591) modification
- Fish passage waiver
- Section 404 dredge and fill permit

Notes

1. Make water use clear
2. LIHI contingent
3.

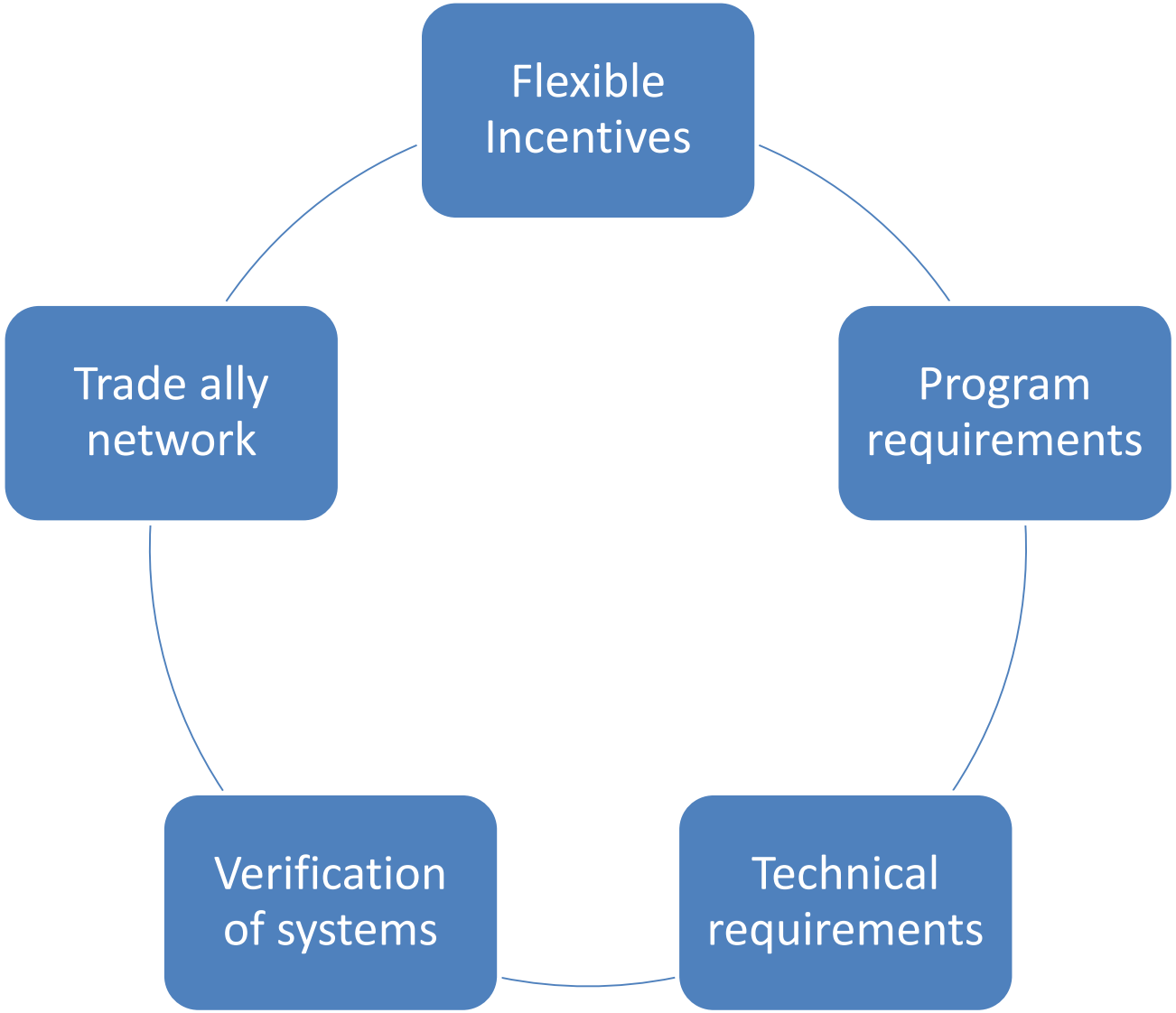
Renewable Energy Opportunities Discussion

RAC

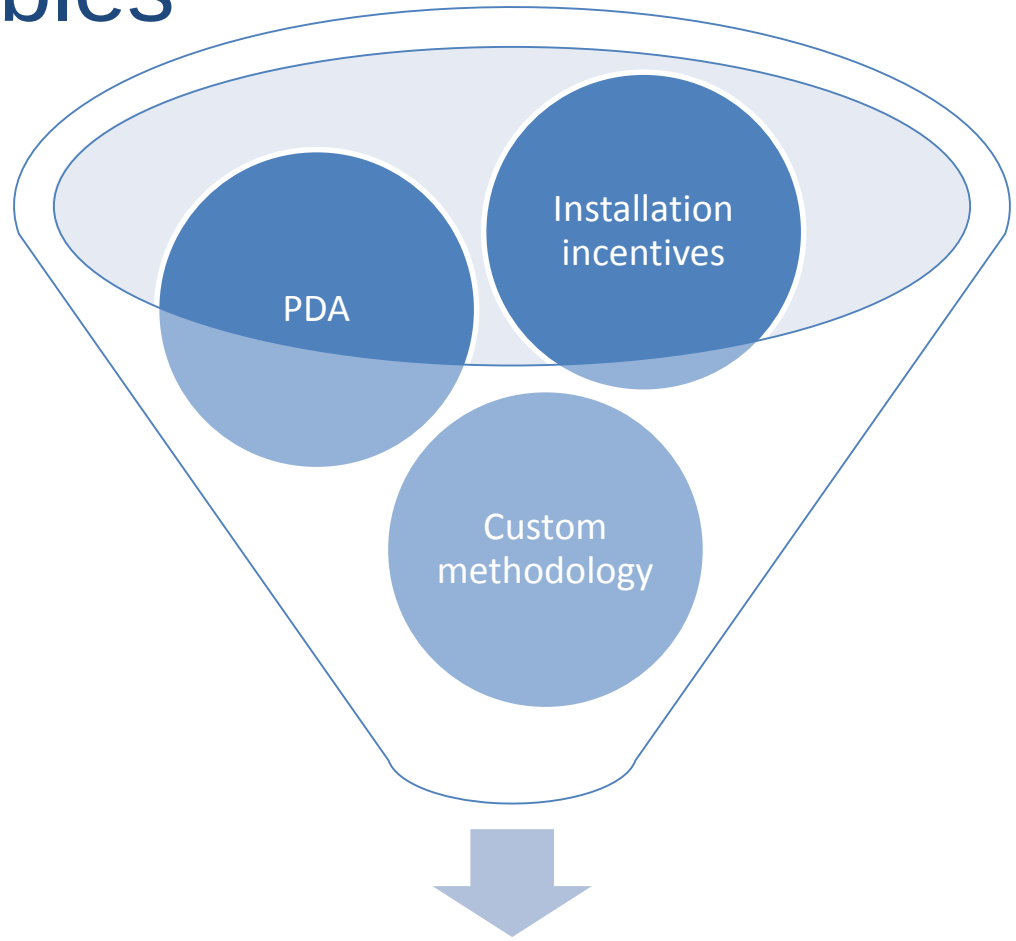
June 22, 2016

Energy Trust of Oregon

Solar


Flexible Incentives
Program requirements
Technical requirements
Verification of systems
Trade ally network

Other Renewables



Hydro, Bio, Geothermal, Wind

Resilience and hazard mitigation

- Lots of discussion about preparing for a disaster that might cause a 1-4 month electricity outage
- Solar (or bio, hydro, etc.) combined with storage – opportunity to stay functional during outage; charge batteries with RE
- Smart inverters can island
- One of the most-requested topics that cities want to discuss with the RE department

Location-specific deployment

- Gain grid/infrastructure benefits from locating renewables at specific locations
- Example: Rhode Island project
- Benefits such as deferral of investment

Food waste planning

- Metro is looking at better uses for food waste that is currently going to landfills
- Several options including energy generation
- We’re already very involved

Diversity and broadening of customer base

- Interest in the community of broadening participation
- Clear from the low-income requirement in the RPS community solar section
- This group can benefit from long-term relief from energy costs
- Energy Trust has some experience with this

Grid modernization and distribution planning

- National discussion – using DERs to meet grid, load, and infrastructure needs
- Energy Trust has resources to bring
- Wide potential

Opportunity list

1. Resilience
2. Location-specific deployment
3. Food waste planning
4. Diversity and broadening the customer base
5. Grid modernization and distribution planning
6. More???

Round 1

- What are we missing from the list?
- Are there other important market conditions or trends that would present new or different opportunities?

Round 2

Choose a topic. Complete the question template.

- How important is this for Energy Trust to pursue?
- What would need to change, happen, or exist for Energy Trust to get involved in this area?
- What value does Energy Trust bring to this area?
- Role for Energy Trust
- Concerns/risks
- What specific ideas or opportunities can you think of related to this area?

Fill in the Enthusiasm Poll

You get two votes.

You can put both in one box or two different boxes.

“Which areas are you most enthusiastic about Energy Trust pursuing (or continuing to pursue)?”