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October 3, 2017

DECISION MEMORANDUM

TO: Council members

FROM: Mike Starrett

SUBJECT: Council decision on release of Energy Storage Paper final draft

PROPOSED ACTION: Council releases final draft of Storage white paper

SIGNIFICANCE: Action item ANLYS-16 called for the development of a whitepaper on the value of energy storage to the power system

BUDGETARY/ECONOMIC IMPACTS

N/A

BACKGROUND

Council staff developed an energy storage whitepaper and took two rounds of feedback from the Generating Resources Advisory Committee followed by a round of general public comment after approval from Council members. The intent of the whitepaper is to provide “just the facts” reference which describes the technologies, costs, and existing and future markets and policies which are most relevant to energy storage being considered for development today. Staff has incorporated feedback from the several rounds of stakeholder feedback and suggests that the white paper is now ready for Council members to release. The presentation for this item will include a summary of public comment and staff response.

ANALYSIS

N/A

ALTERNATIVES

Staff could make additional revisions or take a second round of public comment.

ATTACHMENTS

[LINK](#) to Final Paper: White Paper on the Value of Energy Storage to the Future Power System, [Link](#) to Appendix (Note: links are for internal Council use only)

TABLES, GRAPHS, CHARTS, FIGURES, OTHER GRAPHICS

N/A

Decision To Release Final Draft of **ANLYS-17: White Paper on the Value of Energy Storage to the Future Power System**

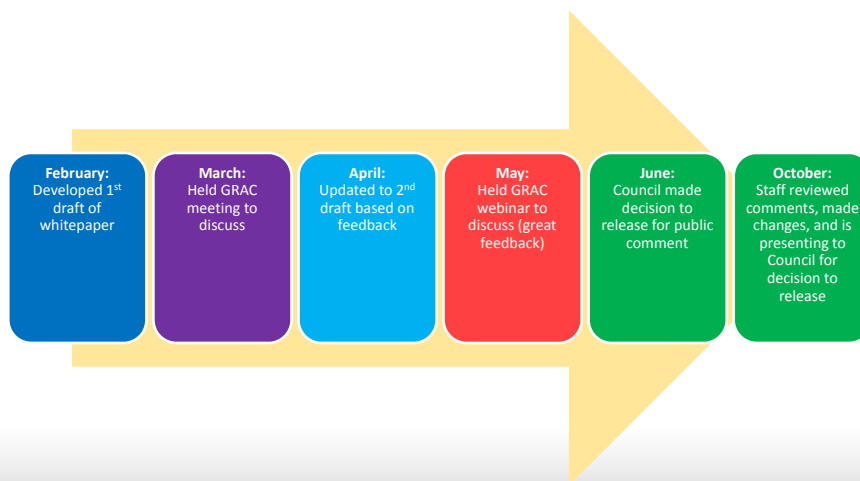
Mike Starrett
October 11, 2017

Background

- **7th Plan ANLYS-16:** *“Research and develop a white paper on the value of energy storage to the future power system”*

“The Council should convene a subgroup of subject matter experts from its Generating Resources Advisory Committee to assist in the research and development of a Council white paper on the full value stream of energy storage and its role in the power system, including transmission, distribution, and generation.”

Timeline thus far



All dates are 2017

Current Progress & Next Steps

- Council staff views whitepaper as the start of a broad based approach to thinking about storage in the region
- Whitepaper focuses on technologies, costs, and value streams – “just the facts”
- Separate, subsequent work to come focused on evaluating and modeling energy storage

Comments (1/4)

- Pumped hydropower storage (PHS) community:
 - Permitting:
 - Several commenters pointed out that closed-loop PHS systems have obtained FERC permits
 - Response: Staff removed difficulty to site/permit as a drawback from PHS
 - Technology:
 - Developer provided staff information about the latest single shaft pump/turbine system
 - Response: Staff added new information about ternary pumps
 - Value Streams:
 - Asked staff to clarify why distribution deferral and local outage mitigation were not attributed to PHS
 - Response: Staff prepared clarifying response to be shared with commenter

Comments (2/4)

- Pumped Hydropower Community (cont.)
 - Economics:
 - Commenters disagreed with the white paper's statement that storage (of all forms) is not likely to pencil out as economic for capacity alone
 - Response: Staff updated the paper to clarify that this was capacity for resource adequacy specifically and emphasized our recognition of accounting for other value streams
 - Response: Staff also added information to whitepaper about the effect that lifetime (i.e. 10 years vs. 40) has on levelized costs
 - Modeling and Stakeholder Workshops:
 - Many commenters expressed interest in seeing the Council help lead the region to better model storage
 - Response: Staff prepared a response indicating our plans to engage our advisory committees in our efforts to better model energy storage

Comments (3/4)

- Tacoma Power:
 - Commented that not all value streams are applicable to all applications and utilities
 - Also commented that production cost models can only provide some insight into the monetary benefit of each value stream and that even those would be imprecise given the lack of a centralized market for capacity
 - Response: Staff prepared a response indicating partial disagreement in that staff is not aware of any attribute of storage that would diminish the confidence of a model-based study relative to the same type of analysis done for traditional supply side resources in all regional IRPs
- Mr. Pace:
 - Encouraged the Council to further explore the benefit storage may have for fish and wildlife by changing the dispatch of hydropower resources
 - Response: Staff has prepared a reply agreeing that storage, like any resource, may have the effect of changing hydropower operations and emphasized the scale of storage development to-date relative to the hydropower system

Comments (4/4)

- Other:
 - Encouraged the Council to specifically develop a resilience value stream
 - Response: Staff has prepared a reply describing how the local outage mitigation benefit in the white paper is an analog to the value stream/outcome staff understood the commenter to be considering

Next steps for whitepaper

- **Decision for Council members to release White Paper on the Value of Energy Storage to the Future Power System**
- **If released, public comment will be posted on website along with staff response**