Design Review Committee Briefing #23

Subject: Primary Power Ownership BCE

Date: June 17, 2019

The Issue

The City of Nampa (City) Wastewater Treatment Plant (WWTP) currently does not own the primary power infrastructure onsite. The City currently rents the electrical infrastructure from Idaho Power Company (IPC), who charges the City a "Facilities Charge" that is similar to a rental payment. This cost will increase when the City adds electrical infrastructure to support Phase II Upgrades. The City investigated the potential for purchasing primary power infrastructure and taking ownership of this system, instead of continuing to pay IPC for renting the infrastructure.

Background and Analysis

The primary power system includes transformers, pad-mount switchboards, conduit, etc. that deliver high-voltage power to major unit processes on site. IPC's above-ground transmission lines deliver high-voltage power to the Nampa WWTP via the primary power infrastructure, currently owned by IPC, which delivers at lower voltage to individual unit processes and facilities.

The City pays a monthly Facilities Charge to IPC of 17 percent of the value of the existing infrastructure for maintaining and operating the Nampa WWTP primary power system. The facilities charge rate is regulated through the Public Utilities Commission (PUC) and includes components for IPC's weighted cost of capital (WACC), book depreciation of assets, income and property taxes, operations and maintenance (O&M) for IPC's distribution facilities, administrative and general expenses, working capital, and insurance premiums. With this approach, IPC performs required operations, maintenance, and emergency response for all distribution infrastructure. The lifecycle cost of continuously renting the primary power infrastructure can exceed the cost of owning it outright. The Technical Team performed a business case evaluation (BCE) to consider the option of owning the primary power infrastructure.

In addition to primary power infrastructure, the BCE considers options for standby power generation. Because the Nampa WWTP cannot be offline at any time, even during power outages, the standby power generation approach is critical. The BCE accounts for two standby power configurations: distributed and centralized, for the electrical loop around the Nampa WWTP. Distributed generation feeds power directly to specific facilities. Centralized generation feeds power in a loop configuration, allowing multiple facilities to be powered. Centralized generation is advantageous because the looped configuration provides a continuous power route that can deliver to multiple facilities at once and/or be used to restart a facility experiencing an outage. The City currently has a distributed power generation system. The City currently has one standby generator building. With Phase II Upgrades, the City will need additional standby power capability for the Blower Building, Tertiary Filtration, and UV disinfection facilities.

The Primary Power BCE considered the following alternatives:

- **Alternative 1.A: Continue Renting with Centralized Standby Power Generation**. Alternative 1.A assumes at the end of Phase II Upgrades, the City would continue renting primary power infrastructure from IPC. The City would construct an additional standby power generation facility and follow a centralized generation scheme.

- **Alternative 1.B: Continue Renting with Distributed Standby Power Generation**. Alternative 1.B is the status quo approach for primary power ownership (i.e. IPC owns and operates the system) and assumes the City adds on to the current distributed standby power system. This distributed standby power approach would locate a generator at each facility that needs it.
- **Alternative 2: Purchase Primary Power with Centralized Standby Power Generation**. Alternative 2 assumes the City negotiates the purchase of primary power infrastructure from IPC. There are three components to Alternative 2, 1) purchase primary power from IPC, 2) install primary power infrastructure for Phase II Upgrades, and 3) install standby power generation facilities.

The Technical Team estimated capital costs, O&M costs, repair and replacement costs for the alternatives. Alternative 1.A and 1.B involve renting, therefore the only capital cost associated with these are related to installing generation capacity. Alternative 2 capital costs include the sale price from IPC, Phase II improvements for expanding the primary power system, and additional standby generation capacity. O&M costs for Alternative 1.A and 1.B are the summation of the monthly Facilities Charges from IPC and O&M costs related to the generation facilities owned by the City. Alternative 2 O&M costs are the third-party contractor for power system maintenance and the O&M costs for the City-owned generation facilities. R&R costs are quantified for the generation facilities only, because they are owned by the City.

Risk and benefit costs were also estimated. Alternative 1.A and 1.B have a risk for tariff price increases enforced by the PUC. Alternative 2 does not possess any risk costs because the City would contract with a third-party maintenance entity.

Table 1 presents the results of the primary power BCE. The results indicate Alternative 2: Purchase Primary Power with Centralized Standby Power Generation has the lowest cost of asset ownership. This result is driven by the significant savings (i.e. greater than $6.5M) savings in the O&M costs due to the elimination of the monthly Facilities Charges. This reduction outweighs the increased capital cost for this alternative.

Table 1. Primary Power BCE Total Net Present Value Summary[1]

Alternative	Capital	O&M	R&R[2]	Risks	Benefits	NPV
Alternative 1.A: Continue Renting with Centralized Standby Power Generation	$3,122,000	$7,892,000	$2,336,000	$234,000	-	($14,643,000)
Alternative 1.B: Continue Renting with Distributed Standby Power Generation	$4,398,000	$8,020,000	$3,626,000	$234,000	-	($17,501,000)
Alternative 2: Purchase Primary Power with Centralized Standby Power Generation	$6,244,000	$1,187,000	$1,938,000	-	-	($9,773,000)

[1]Cells highlighted in green indicate the lowest cost alternative for the conditions shown. Total costs are shown in 2019 dollars, represent the period 2020 through 2040, and are rounded to the nearest $1,000.

[2]Repair and replacement costs related to primary power infrastructure are accounted for in O&M estimate. Repair and replacement costs shown are specific to the generation facilities.

NPV = net present value.

Potential Consequences

The following consequences are for DRC's consideration:

- The purchase price for the existing Idaho Power assets have been assumed based on recent experience and professional judgement. The actual purchase price of these assets will be negotiated with Idaho Power. However, given the overall spread in the net present values, the results of this negotiation are not expected to change the preferred alternative.
- The original budget for the Phase II Upgrades did not include the primary power purchase. Therefore, the purchase would have to be done with savings from other projects throughout Phase II Upgrades or by using contingency funds.
- The timing of this decision relative to preliminary design is important. The configuration of primary power will impact the preliminary design of other unit processes. Therefore, initial direction is needed from the DRC as to whether the opportunity to purchase the primary power system should be pursued. This decision can be revisited later in the preliminary design process as the updated cost estimates are prepared.

Recommendation

The preferred alternative in the BCE is Alternative 2: Purchase Primary Power with Centralized Standby Power Generation. The Technical Team recommends proceeding with this alternative and beginning negotiations with Idaho Power to establish the purchase price of these assets. Once the price has been established, this decision can be validated in the context of the full capital costs for the Phase II Upgrades. This would occur at the end of the preliminary design process, which will occur in late 2019.