

Scow Bay Generation

The need and solution to achieve adequate standby power in Petersburg

September 19, 2022



Standby Power: Why do we need it?

- Local generation (diesel and hydro power) provides power to the community if SEAPA power is not available.
 - Storm damage
 - Component/equipment failure
 - Submarine cable failure
- Diesel and local hydro power enables proactive line maintenance and the annual SEAPA maintenance shutdown with no outages.
- Without adequate standby power, businesses and residences would be without power for the duration of the hydropower outage.
 - Commerce depends on power reliability.
 - Health and safety of our citizens is important.

Existing Generation Capacity

EXISTING GENERATION			
UNIT	KW RATING	90%	N-1
EMD 20-1	2500	2250	2250
EMD 20-2	2500	2250	0
EMD 16	2100	1890	1890
CAT 399	900	810	810
CAT 398	600	540	540
MTU (Scow Bay)	2500	2250	2250
MTU 350 Station Service	350	315	315
Superior	1250	1125	1125
Hydro (Crystal Lake)	1755	1755	1755
Total (kW)	14455	13185	10935

Table 1 - Existing Generation Capacity

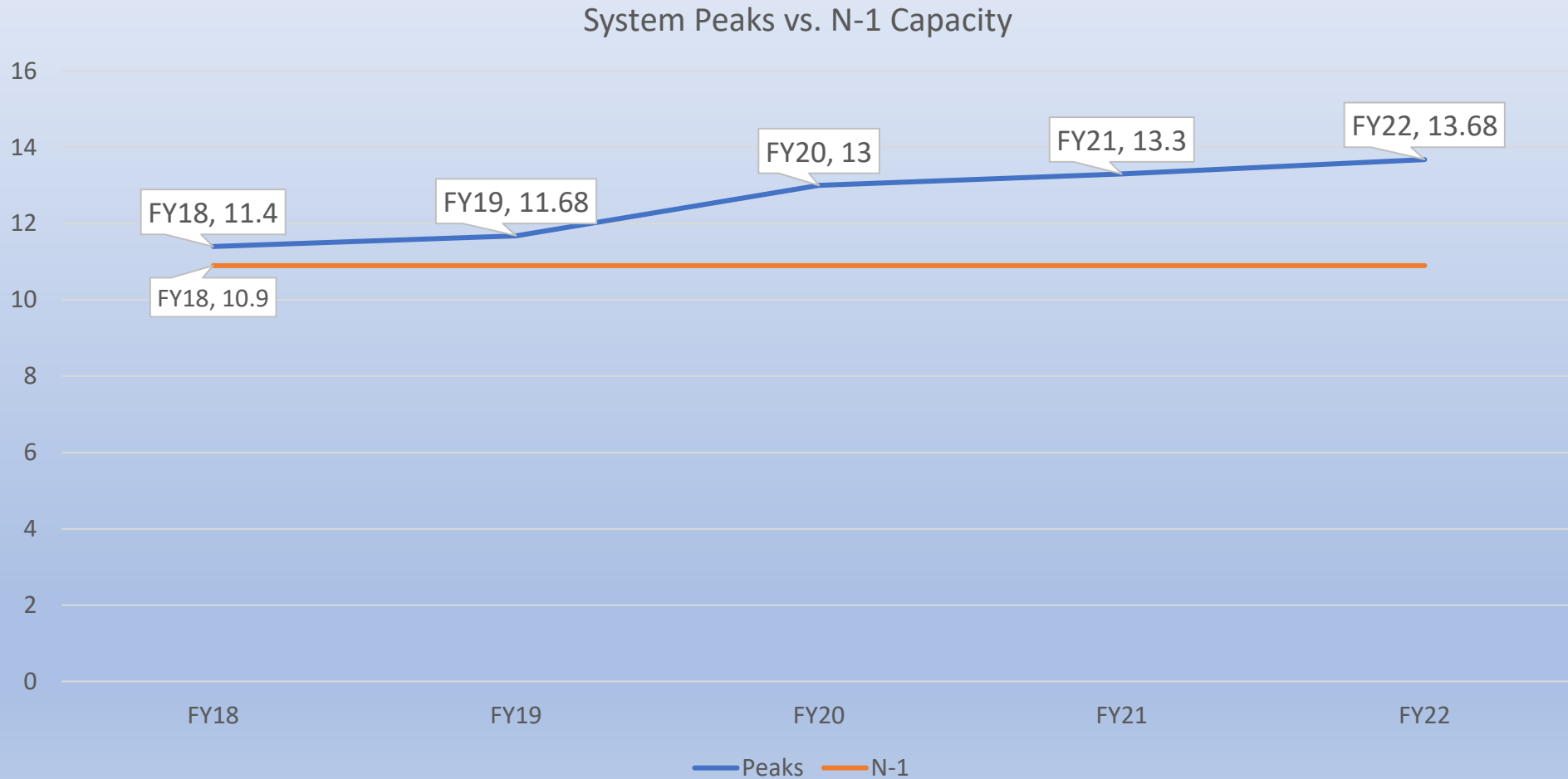
Existing Generation N-1 Scenario

- Overall capacity assumes that ALL generation units are available.
 - Ideal but not realistic.
- N-1 scenario is used for planning of improvements as it shows what the standby system is capable of without one unit available.
- Worst case scenario is that one of our largest generators is not operable.
- Planning for the next increment of standby generation was based on projected load growth and the N-1 condition.

Load Growth in Petersburg

- Annual kilo-watt hour generation/purchases has grown by 3.5% per year since 2018 to over 61,000,000 kwh in FY22.
- Average monthly peaks have grown 3.2% per year since 2018.
 - Peak loads are not constant, but represent that highest loads served by PMPL in the course of a month or year.
- Highest recorded annual peaks have grown by an average of 5.5% per year since 2018.
 - January of 2022 saw the largest peak ever of 13.68 MW.
- Why load growth with a fairly stagnant population?
 - Electrification: Appliances, devices, boilers, electric heat, heat pumps, cold winters...
 - Electric Vehicles just around the corner.

Peaks vs. Generation Capacity



Next Increment of Standby Power

- Electrical Power Systems (EPS) has provided a report detailing the gap between existing standby generation and peak loads.
- It is recommended that PMPL should increase standby power by 3.5 megawatts in order to cover this gap.
- As loads continue to rise, a second increment of 3.5 megawatts will be needed as soon as is feasible – due to continued load growth.
- This will allow PMPL to cover power requirements in the coldest parts of the winter if SEAPA power is unavailable.

Projected Costs

- Preliminary estimates for the recent electrical department revenue bond were based upon the last Scow Bay Generation project and put forward as \$1.4 million.
- Increases in costs have outpaced the initial estimate and the amount of funding that is available.
- EPS has provided a rough order of magnitude cost estimate for a 3.5 MW generator that indicates a project of this size will cost approximately **\$4.6 million**.
 - The EPS estimate includes the purchase of a low-hour, used EMD unit that is currently available from our regional EMD vendor. Metlakatla has recently purchased two similar units for their standby plant. Cost savings are significant when looking at this option.

A Path Forward

- In order to move toward a solution as soon as possible, without requesting another bond issue and raising rates, a phased approach is needed.
- Phase 1: Develop specifications for purchase of a 3.5MW diesel generator that would allow for acceptance of proposals of used, but refurbished and warrantied, equipment.
- Phase 2: Develop plans for siting and incorporating the new generator at the Scow Bay site. Install infrastructure to support the new generator.
- Phase 3: Install and commission the new generator.

Progress as Budgeting Allows

- PMPL would utilize the recent bond proceeds to fund Phase 1.
- Future phases would be enabled by seeking funding for capital improvements in the annual budget process.
- This approach avoids rate increases to our customers and moves the project forward as the department can afford it.
- All phases are anticipated to take approximately 3 years to complete.

Interim Solutions to Meet Peak Loads

- Engineering and SCADA improvements would be needed to connect rental generation equipment to our system.
 - Mobile rental unit(s) can be procured to fill the gap in the short term and ensure that the utility can restore power during outages in the winter peaks.
- Rebuild Caterpillar 398 in order to keep as much generation capacity in place as possible.
 - Thoughts were to retire this unit due to age and condition, but it appears to be a better decision to maintain the unit in place since replacement is so costly. Cat 398 has a capacity of 540kW.
- Completion of the Blind Slough Hydro project will increase generation capacity from 1755kW to approximately 2100kW.

Interim Solutions

- Develop contingencies to limit system loads during a winter peak restoration scenario.
 - shutting down pool boilers until hydro power is restored.
 - shutting down harbor power until hydro power is restored.
 - requesting significant customer conservation and use of alternate heating options.
 - temporary, rotating outages to reduce loads and allow existing diesel plant to provide its maximum safe generation capacity until hydro power is restored.

Conclusions

- PMPL must move forward with the project to add standby generation capacity at Scow Bay.
- Projected costs outweigh current funds available.
- Existing rates will need to support future phases of the project through the annual budget process.
- A phased approach, in addition to interim solutions, is best to avoid additional debt financing and further increases to electrical rates.
- PMPL appreciates the support of the Assembly, the Manager and the community as we move forward with this work.

Questions?

Thank you.