

Idea #	Idea Description	Advantages	Disadvantages	Develop Status	Rating
5	Use alternate materials / methods for site retaining walls	Simplifies installation / cost	Maintenance / Aesthetics	Develop	1
6	Relocate buildings further from berm/tunnel to reduce retaining walls	Reduce retaining walls	Increases distributions / piping May increase site grading / earthwork Impacts connections to tunnel	Develop	1
9	Use FR-3 or non-flammable for transformer fluid in lieu of mineral oil	Reduced separation of equipment from building Reduce piping runs Reduced site footprints Increased operating efficiency / hotter	Increase transformer fluid costs Potential availability issues Maintenance issues with leaks	Develop	1
14	Replace vertical inline pumps with horizontal split case type and revise orientation/layout	Improves maintainability / access	May increases equipment footprint	Develop	1
19	Reduce parking spaces at unoccupied buildings	Reduced scope / cost Reduced maintenance Reduces impervious area / runoff		Develop	1
22	Use retention ponds (LID) in lieu of dry wells for stormwater	May create fill for site Improves maintainability Reduce cost	Size of basins may be large / site impacts	Develop	1
37	Incorporate temporary shoring as a permanent retaining wall for Building 1010C	Reduces size of building wall and footing Reduce structural steel	Geotechnical support	Develop	1
51	Use heat pumps in lieu of cooling-only D/X systems and reduce perimeter unit heaters	Reduce unit heaters / improves maintenance Reduce energy / Improves efficiency		Develop	1
58	Reduce return air terminal units and related ductwork	Reduce ductwork Reduce equipment Simplifies maintenance	Need to confirm air flows and distribution	Develop	1
3	Use insulated metal roof panels in lieu of standing seam on Buildings 1010C and 1004G	Simplifies installation / cost		Develop	1
21	Identify onsite source of borrow for fills	Reduce cost / hauling / earthwork Reduce risk of availability	Potential impacts to onsite locations Potential environmental impacts	Develop	1
57	Reclassify set points for non-occupied buildings	Reduces insulation requirements Reduce energy usage Reduce mechanical loads	Comfort levels / temperatures in building	Develop	1
7	Use fabric ductwork for distribution in lieu of galvanized sheet metal	Material savings	Potential maintenance impacts	Develop	2
11	Use precast utility corridor between 1010C and 1010D in lieu of cast-in-place	Improved constructability / cost		Develop	3
12	Combined precast/prefab solution for Substation vault and switch house	Improved constructability / cost		Develop	2
16	Use aluminum wire for low-voltage (600 volt) feeders from unit substations to distribution panels	Material savings Potential reductions in line loss		Develop	2

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18	Utilize cooling towers that allow for dry cooling when atmospheric conditions allow	Reduced energy usage Improves water treatment requirements	Increase initial cost Increases equipment size / space requirement onsite	Develop	2
27	Install controls/electrical equipment less than 50V in separate cabinets than equipment more than 50V	Improves maintainability		Develop	2
33	Use loop switch for RF equipment in lieu of pad-mounted radial distribution	Higher ampacity capability Simplifies equipment procurement / availability	Non-standard customized equipment	Develop	2
34	Specify dry-type transformers in lieu of oil-filled	Eliminates oil containment Reduce footprint / site impacts	Potential maintenance implications / equipment failures	Develop	2
35	Use micropiles for deep foundation of Building 1004G	Reduces separate trades / equipment Matches 1006G foundation		Develop	2
53	Combine louvers and dampners into single item	Reduce cost		Develop	2
56	Tie generators to ALC system for increased monitoring	Improves monitoring of equipment and systems	Minor distribution costs	Develop	2
32	Reduce lists of acceptable mechanical equipment manufacturers	Reduces impacts to operational staff Improves reliability Reduces submittal review times	Reduced flexibility	Develop	3
2	Specify the use of ProPress in lieu of soldering for domestic plumbing	Reduces installation and prep time Reduces inspection / construction oversight	Potential maintenance issues with valves on larger pipes Fitting cost increases	Develop	3
26	Provide dedicated construction entrance in lieu of using existing BNL access points	Reduces construction-related impacts / schedule Improves access to project site	Additional security personnel	Develop	3
28	Phase installation of redundant (N+1) process equipment	Reduce scope / cost Reduce space requirements / footprints	Reduces redundancy Potential downtime of system	Develop	3
38	Provide quick connections to support back-up equipment for building cooling (where redundancy not provided)	Simplifies maintenance Reduces potential of downtime	Minimal add cost	Develop	3
43	Procure master construction management services and develop master schedule	Reduce risk Reduce claims Supplements available capabilities / resources	Cost of additional services / contractors	Develop	3
45	Perform conflict detection with LIDAR scans and models of tunnel	Reduce risk Reduce claims / changes		Develop	3
46	Update tunnel models with conditions after removals/rehab	Reduce risk Reduce claims / changes		Develop	3