



Seattle City Light

June 30, 2011

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

**Re: Skagit River Hydroelectric Project (FERC Project No. 553)
Application for Non-Capacity-Related Amendment of License
Volume I (Public)**

Dear Secretary Bose:

Seattle City Light (SCL) is the licensee for the Skagit River Hydroelectric Project (Skagit Project), which is located on the Skagit River in northwestern Washington State. The Skagit Project comprises three power generating developments—Gorge, Diablo, and Ross—and associated lands and facilities. The Gorge Powerhouse has a licensed capacity of 207.5 megawatts (MW), but is capable of generating only 176 MW, due to head loss through the existing power tunnel. SCL is proposing an efficiency improvement project—the Gorge 2nd Tunnel Project (G2T Project) to address this loss.

The G2T Project would involve boring a second tunnel through rock between the Gorge Dam and the Gorge Powerhouse to divide the current flow of water into the powerhouse. Dividing the flow would increase the efficiency of the project by reducing frictional head loss of the water during conveyance, raising the head pressure at the turbines, increasing the torque on the generators, and producing more power for any given flow. Neither the maximum authorized flow for the Gorge facility nor the installed nameplate generating capacity would change. The G2T Project would produce approximately an additional 56,000 megawatt-hours of energy per year, and thereby reduce the amount of energy produced by fossil fuels that the utility currently purchases to meet customer demand.

The enclosed Application for Non-Capacity-Related Amendment of License addresses the following:

- Constructing a second power tunnel between the Gorge Dam and the Gorge Powerhouse.
- Incorporating into the license voluntary flow measures currently implemented at the project to protect fish in the Skagit River downstream of the project.
- Adjusting small sections of the Skagit Project Boundary at the Gorge Powerhouse and upstream end of the second tunnel.



- Updating all drawings to current FERC standards for the entire Project Boundary and all the federal lands encompassed within the boundary. The resulting Exhibit G drawings incorporate information from drawings previously designated Exhibits J and K.
- Revising the datums shown on all Exhibits F and G drawings.
- Re-designating existing Exhibit L drawings as Exhibit F drawings and revising the datums on the drawings.

As required by 18 CFR § 4.201(c), the amendment application contains revised license exhibits for those exhibits that would be affected by the proposed amendment. The application is divided into two volumes:

- Volume I – Initial Statement; Exhibits A, B, C, D, E, and G; Appendices (Public)
- Volume II – Exhibit F (CEII – non-public, filed separately)

As noted, Volume II to the application contains Exhibit F project drawings that are considered critical energy infrastructure information (CEII) under 18 CFR § 388.112. Accordingly, Volume II is being filed separately.

In accordance with 18 CFR § 4.38(a)(7), on August 24, 2010, SCL published a notice in local newspapers and distributed a draft of the Application for Non-Capacity-Related Amendment of License to resource agencies, Tribes, and stakeholders whose interests may be affected by the proposed amendment. On September 24, 2010, SCL conducted a joint public/agency meeting and site tour to discuss the proposed amendment. Comments regarding the draft application were due on November 19, 2010. Documentation of the consultation process is included in Appendix 6 of Volume I of the amendment application. All comments received have been addressed in the amendment application.

To the extent that the Commission determines that three-stage consultation pursuant to 18 CFR § 4.38 would have been appropriate in this case, SCL is requesting a waiver of § 4.38 via a separate filing.

If you have any questions or need additional information, please contact John Owen at John.Owen@seattle.gov, or (206) 684-3974.

Respectfully submitted,



Jorge Carrasco
Superintendent, Seattle City Light

Enclosure: Volume I of Application for Non-Capacity-Related Amendment of License
(3 CDs: original, 2 copies)

cc: Attached Distribution List

Distribution List

Federal

Bureau of Indian Affairs (BIA)
Bureau of Land Management (BLM)
Environmental Protection Agency (USEPA)
National Oceanic and Atmospheric Administration, National Marine Fisheries
Service (NOAA Fisheries)
National Park Service (NPS)
U.S. Army Corps of Engineers (USACE)
U.S. Fish and Wildlife Service (USFWS)
U.S. Forest Service (USFS)

Washington State

Department of Archaeology and Historic Preservation (DAHP)
Department of Ecology (Ecology)
Department of Fish and Wildlife (WDFW)
Department of Transportation (WSDOT)

Local Government

Skagit County
Snohomish County
Whatcom County
City of Bothell
City of Concrete
City of Darrington
City of Lake Stevens
Marblemount
City of Marysville
City of Mill Creek
Oso
Rockport
City of Snohomish

Tribes

Nlaka'pamux Nation of British Columbia
Sauk-Suiattle Indian Tribe
Swinomish Indian Tribal Community
Upper Skagit Indian Tribe

Other

American Whitewater
Dike District 3
Flow Coordinating Committee
National Parks Conservation Association
North Cascades Conservation Council
North Cascades Institute
Sierra Club
Wilderness Society
Wildlife Management Review Committee

Application for Non-Capacity-Related Amendment of License

Volume I

**Skagit River Hydroelectric Project
FERC Project No. 553**

June 2011



700 5th Avenue, Suite 3200
Seattle, WA 98104-5031

This page intentionally left blank.

Table of Contents

Acronyms and Abbreviations	v
Initial Statement	IS-1
Exhibit A – Project Description	A-1
Physical Composition	A-1
Water Surface Area and Elevation	A-2
Rated Capacity	A-2
Primary Transmission Lines	A-2
Transmission Equipment	A-2
Lands of the United States	A-3
Exhibit B – Project Operation and Resource Utilization	B-1
Alternative Alignments	B-1
Alternative Designs, Processes, and Operations	B-1
Powerhouse Operation, Annual Plant Factor	B-2
Operation during Adverse, Mean, and High Water Years	B-2
Dependable Capacity and Average Annual Energy Production	B-3
Minimum, Mean, and Maximum Recorded Flows	B-4
Area-Capacity Curve	B-11
Estimated Minimum and Maximum Hydraulic Capacities and Efficiencies	B-12
Tailwater Rating Curve and Powerhouse Capability Versus Head	B-13
System and Regional Power Needs	B-14
Load Curves and Tabular Data	B-14
Conservation and Rate Design Programs	B-16
Amount of Power to be Sold and Proposed Purchaser	B-16
Statement of Plans for Future Development	B-16
Exhibit C – Construction Schedule	C-1
Commencement and Completion Dates	C-1
Proposed Commencement Date of First Commercial Operation	C-1
Chronology of Original Completion Dates	C-1

Exhibit D – Project Costs and Financing	D-1
Estimated Costs.....	D-1
Previously Constructed, Unlicensed Water Power Structures or Facilities	D-1
Licensee Applying for a New License and Not a Municipality	D-1
Estimated Average Annual Cost of the Total Project.....	D-1
Estimated Annual Value of Project Power	D-2
Other Electric Energy Alternatives.....	D-2
Consequences of Denial of Application	D-2
Sources and Extent of Financing and Annual Revenues	D-2
Cost to Develop the Application	D-2
On-Peak and Off-Peak Values of Project Power	D-3
Exhibit E – Applicant-Prepared Environmental Assessment.....	E-1
Exhibit F – Design Drawings	F-1
Exhibit G – Project Boundary Maps	G-1

List of Figures

Figure IS-1. Project Vicinity Map	IS-17
Figure B-1. Monthly Duration Curve for January	B-5
Figure B-2. Monthly Duration Curve for February	B-5
Figure B-3. Monthly Duration Curve for March	B-6
Figure B-4. Monthly Duration Curve for April	B-6
Figure B-5. Monthly Duration Curve for May	B-7
Figure B-6. Monthly Duration Curve for June	B-7
Figure B-7. Monthly Duration Curve for July	B-8
Figure B-8. Monthly Duration Curve for August	B-8
Figure B-9. Monthly Duration Curve for September	B-9
Figure B-10. Monthly Duration Curve for October	B-9
Figure B-11. Monthly Duration Curve for November	B-10
Figure B-12. Monthly Duration Curve for December	B-10
Figure B-13. Gorge Reservoir Area – Capacity Curves	B-11
Figure B-14. Tailwater Rating Curve	B-13

Figure B-15. Powerhouse Capability versus Head	B-14
Figure B-16. System Load Forecast Graph and Tabular Data	B-15
Figure B-17. Regional Load Forecast Graph and Tabular Data	B-15
Figure C-1. Construction Schedule	C-3

List of Tables

Table A-1. Lands of the United States Enclosed within the Project Boundary	A-5
Table B-1. Hydraulic Capacities and Efficiencies of Gorge Powerhouse	B-12

List of Appendices

Appendix 1 – Water Management Plan

Appendix 2 – Water Quality Report

Appendix 3 – Geotechnical Report

Appendix 4 – Tunnel Diameter Optimization, Layout, and Water Transient Study Report

Appendix 5 – License Amendment Revisions (Shown as Tracked Changes) for License Article 404 and Section 6.0 of Fisheries Settlement Agreement as Incorporated by License (1995) including a Revised Table C-3

Appendix 6 – Consultation Documentation

This page intentionally left blank.

Acronyms and Abbreviations

APEA	Applicant-Prepared Environmental Assessment
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CEII	critical energy infrastructure information
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIP	Capital Improvement Program
City	City of Seattle
DAHP	Washington State Department of Archaeology and Historic Preservation
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FPC	Federal Power Commission
FSA	Fisheries Settlement Agreement
G2T Project	Gorge 2nd Tunnel Project
kW	kilowatt
MW	megawatt
MWh	megawatt-hour
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NPS	National Park Service
RCW	Revised Code of Washington

Recreation Area	Ross Lake National Recreation Area
SCL	Seattle City Light
Services	National Marine Fisheries Service and U.S. Fish & Wildlife Service
Skagit Project	Skagit River Hydroelectric Project
TDOL	Tunnel Diameter Optimization, Layout
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation

Initial Statement

United States of America

Before the
Federal Energy Regulatory Commission

)
Seattle City Light) Project No. 553
)

Application for Non-Capacity-Related Amendment of License

(1) Seattle City Light applies to the Federal Energy Regulatory Commission (“Commission”) for a non-capacity-related amendment of license for the Skagit River Hydroelectric Project (the “Skagit Project”), FERC No. 553, (i) to permit the construction of a second power tunnel at the Skagit Project’s Gorge Development, as more fully described in the attached exhibits, and (ii) to amend the license to incorporate additional operational measures intended to improve conditions for the Endangered Species Act (“ESA”) listed salmonid species that utilize the Skagit River below the Skagit Project.

(2) The exact name, business address, and telephone number of the applicant are:

Seattle City Light
P.O. Box 34023
Seattle, WA 98124-4023
(206) 684-3974

(3) The applicant, Seattle City Light, is a municipality, licensee for the water power project, designated as Project No. 553 in the records of the Federal Energy Regulatory Commission, issued on May 16, 1995. *City of Seattle, Washington, Department of the Interior, 71 FERC ¶ 61,159 (1995).*

- (4) The non-capacity-related amendment of license proposed and the reasons why the proposed changes are necessary are described in detail below.
- (5) The statutory or regulatory requirements of the state in which the Project is located and that affect the Project as proposed, with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act, and the steps which Seattle City Light has taken or plans to take to comply with each of the laws, are summarized below and detailed in the attached exhibits.

Agency	Statute or Regulation	Permit/Approval	Status
Washington State Department of Ecology	Section 401 of Federal Water Pollution Control Act; State Water Pollution Control Act (RCW 90.48)	Water Quality Certification	Certification not required, per April 13, 2009, determination by Washington State Department of Ecology.
Washington State Department of Ecology	Chapter 90.03 RCW	Appropriation, Diversion and Use of Water	Certificates of Surface Water Right Nos. 8250, 8248, 8989, R217, and G1-00489C; and Application No. S1-27994.
Washington State Department of Ecology	U.S. Coastal Zone Management Act (16 U.S.C. 1451 et seq.) 15 CFR Parts 923-930	Coastal Zone Consistency Determination	Determination pending.
Washington State Department of Archaeology and Historic Preservation	Chapter 43.334 RCW; Section 106 of the National Historic Preservation Act and Executive Order 11593	Traditional Cultural Properties Agreements	Memoranda of Agreement entered into by SCL, the Washington State Historic Preservation Officer, the Advisory Council on Historic Preservation, the National Park Service, the Tribes, the Nlaka'pamux Nation, and Commission staff, as described in Order Issuing New License and in compliance with license Article 414.
Washington State Department of Fish and Wildlife	RCW 75 WAC 220-110	Hydraulic Project Approval	To be completed.

Agency	Statute or Regulation	Permit/Approval	Status
Washington State Department of Transportation	RCW 47	Utility Permit/Right-of- Way Permit	To be completed.
State of Washington	RCW 35.92.010	Municipal Authority	Legislative authority for municipal utility and municipal hydroelectric facilities.

Introduction

Seattle City Light (“SCL”), a department of the City of Seattle, is the licensee for the Skagit River Hydroelectric Project (the “Skagit Project”). As licensed by the Commission, the Skagit Project consists of three developments—Ross, Diablo, and Gorge. The full generating capacity of the Gorge Powerhouse cannot be achieved as a result of head losses in the existing 12,000-foot-long power tunnel. As described in greater detail in this application, SCL has determined that boring a second power tunnel between the Gorge Dam and the Gorge Powerhouse can reduce these losses. Accordingly, SCL hereby respectfully applies to the Commission for a non-capacity-related amendment of the license to construct this second power tunnel (the “G2T Project”). In addition, SCL proposes to amend the license to incorporate operating measures designed to further protect fishery resources—including ESA-listed salmonids—affected by the Skagit Project.

This is a non-capacity-related amendment of license, as that term is defined in 18 CFR § 4.201(b), because it does not involve additional capacity not previously authorized and will not increase the maximum hydraulic capacity of the Skagit Project or increase the installed nameplate capacity. In addition, it does not involve (i) the construction of a new dam or diversion in a location where there is no existing dam or diversion, as contemplated by 18 CFR § 4.38(a)(6)(v)(A), (ii) any repair, modification, or reconstruction of an existing dam that would result in a significant change in the normal maximum surface area or elevation of any project impoundment or reservoir, as contemplated by 18 CFR § 4.38(a)(6)(v)(B), or (iii) the addition of new water power turbines, as contemplated by 18 CFR § 4.38(a)(6)(v)(C). Accordingly, this amendment application has been prepared in accordance with 18 CFR § 4.201(c) and 4.38(a)(7). However, as described in greater detail below, SCL has consulted extensively with all agencies, Tribes, and non-governmental organizations that have or may have an interest in the proposed amendment. As discussed below, SCL is also requesting a waiver of three-stage consultation.

Background and Need for this Amendment

The Skagit Project is located between river miles 127 and 94 on the Skagit River in Whatcom County, near the towns of Diablo and Newhalem, Washington, approximately 100 miles from the City of Seattle (see Project Vicinity Map, Figure IS-1). The Skagit Project's transmission lines are located in Whatcom, Skagit, and Snohomish Counties. The Project consists of three developments with a total installed capacity of 689.4 MW. The current Project boundary encompasses lands of the United States totaling 19,280.72 acres. With the exceptions of the transmission lines and wildlife habitat mitigation lands, the Skagit Project is located entirely within the outer boundaries of the 117,524-acre Ross Lake National Recreation Area (the "Recreation Area"), which is administered by the Department of the Interior's National Park Service.

As the Commission recognized in the 1995 order issuing a new license, the Skagit Project predates the Recreation Area. The North Cascades Park Act of 1968, Pub. L. No. 90-554, 82 Stat. 926, established the North Cascades National Park, the Lake Chelan National Recreation Area, and the Ross Lake National Recreation Area. The Ross Lake National Recreation Area was set aside "to provide for the public outdoor recreation use and enjoyment of portions of the Skagit River; Ross, Diablo, and Gorge Lakes together with the surrounding lands; and for the conservation of scenic, scientific, historic, and other values contributing to the public enjoyment of such lands and waters." 82 Stat. 927. Section 505 of the Act, 82 Stat. 930, amended by 102 Stat. 3963 in 1988, provides:

nothing in this Act shall be construed to supersede, repeal, modify, or impair the jurisdiction of the Federal Power Commission [predecessor to FERC] under the Federal Power Act (41 Stat. 1063), as amended (*16 U.S.C. § 791a et seq.*), in the lands and waters within the Skagit River Hydroelectric Project, Federal Energy and [sic] Regulatory Commission Project 553, ...; and existing hydrologic monitoring stations necessary for the proper operation of the hydroelectric projects listed herein.

As relevant here, the Gorge Development consists of a combination concrete arch and gravity diversion dam rising 300 feet from bedrock to the crest; a reservoir with a capacity of 8,500 acre-feet; a 21-foot-diameter, 12,000-foot-long power tunnel, which conveys water to the powerhouse and creates a 2.7-mile-long bypassed reach; and a powerhouse containing four generating units with a combined nameplate capacity of approximately 207.5 MW. The Gorge Dam was constructed in its present form in 1956, after the Federal Power Commission (FPC) authorized construction of the higher dam, resulting in the current net head of 380 feet. *City of Seattle, Washington*, 15 F.P.C. 1196 (1956). Construction of

the higher dam increased the electrical output potential of the Gorge Powerhouse, but experience has since shown that it also increased friction losses in the tunnel.

As noted, the Commission issued a new license¹ for the Skagit Project on May 16, 1995, when it approved a multi-party offer of settlement and eight supporting agreements, which resolved all issues related to Skagit Project operation, fisheries, wildlife, recreation and aesthetics, erosion control, archaeological and historic resources, and traditional cultural properties. One of the eight settlement agreements was the Fisheries Settlement Agreement, which was intended, *inter alia*, to mitigate the impacts of daily and seasonal downstream flow fluctuations. Thus, the Fisheries Settlement Agreement incorporated an Anadromous Fish Flow Plan and the Anadromous and Resident Fish Non-Flow Plan and established SCL's obligations relating to fishery resources affected by the Skagit Project, including numerous provisions to protect resident and migratory fish species. These provisions include, but are not limited to, flows downstream of the Gorge Powerhouse, flow releases and limits to protect salmon and steelhead spawning, egg incubation and juvenile rearing, requirements for dry water years and periods of flooding, advance scheduling of hourly generation, field monitoring, and non-flow measures for steelhead production, Chinook salmon research, chum salmon habitat, sediment reduction, and trout protection and production.

The Fisheries Settlement Agreement also established a Flow Coordinating Committee made up of eight members in addition to SCL, to implement the flows prescribed by the Fisheries Settlement Agreement and the new license. SCL has worked continuously with the Flow Coordinating Committee since the new license was issued to determine and implement the best flow regime to protect the fishery resources affected by the Project. On the basis of this joint effort, SCL has developed and implemented a voluntary set of flow measures that go beyond flow protection provisions currently included in the Fisheries Settlement Agreement. SCL is proposing to amend Article 404 of the license to incorporate these measures into the license. In addition, in accordance with Section 2.8.2 of the Fisheries Settlement Agreement (Modification), the Flow Coordinating Committee has agreed to modify Section 6.3 of the Fisheries Settlement Agreement to incorporate the following four flow measures:

1. Downramping rates limited to < 3,000 cfs/hr from October 16 to December 31 each year;
2. Salmon fry stranding protection start date beginning January 1 instead of February 1;

¹ Order Accepting Settlement Agreement, Issuing New License, and Terminating Proceeding, *City of Seattle, Washington, Department of the Interior*, 71 FERC ¶ 61,159 (1995).

3. Chum salmon spawning default start date of November 1 (currently November 15); and
4. Increased November/December chum salmon minimum incubation flows in Table C-3 of the Fisheries Settlement Agreement (see revised table in the Biological Evaluation, APEA Appendix C (Exhibit E)).

As noted, these flow measures are currently voluntary. They reflect the best professional judgment and implementation experience of the Flow Coordinating Committee, provide greater protection for fishery resources, and exceed the requirements imposed by the new license. SCL has obtained signatures from the parties to the Fisheries Settlement Agreement and will be submitting it for Commission approval.

Description of and Need for the Proposed Amendment

Although the Gorge Powerhouse has four turbine-generator units with a combined nameplate generating capacity of 207.5 MW, the powerhouse is only capable of generating 176 MW during normal conditions. Currently, water is conveyed from the dam to the powerhouse via a 12,000-foot-long power tunnel. The maximum recorded flow through the powerhouse is approximately 8,112 cubic feet per second (cfs). SCL has been unable to achieve the full generating capacity of the Gorge Powerhouse, because of head loss through the existing power tunnel. SCL has determined that a second power tunnel would reduce system head loss and increase generating efficiency without using additional flow.

A study of a second tunnel began in 2006, concurrent with the approval by Washington State voters of Initiative 937, also called the Energy Independence Act (Chapter 19.285 RCW). The Energy Independence Act requires large utilities, such as SCL, to obtain 15% of the energy they sell from renewable sources by 2015. The new energy (approximately 56,000 megawatt-hours per year) that the G2T Project will enable SCL to produce will count toward SCL's commitment to renewable energy and will reduce the amount of energy produced by fossil fuels that the utility currently must buy to meet its customers' needs.

SCL proposes to bore a second tunnel through rock between the Gorge Dam and the Gorge Powerhouse to increase the efficiency of the Gorge Development by reducing frictional head loss of the water during conveyance, raising the head pressure at the turbines, increasing the torque on the generators, and producing more power for any given flow. Neither the flows at the Gorge Development nor the installed nameplate capacities would change.

In addition to providing information related to the addition of the new power tunnel between the Gorge Dam and Powerhouse, this amendment application:

- Formalizes the four currently voluntary flow measures described above for the Skagit River by their inclusion in the license and by modifying the Fisheries Settlement Agreement.
- Adjusts a small section of the Project Boundary at the portal of the new tunnel adjacent to the Gorge Powerhouse and a small section near the upstream end of the new tunnel.
- Updates all drawings to current FERC standards for the entire Project Boundary and all of the federal lands encompassed within the boundary. The resulting Exhibit G drawings incorporate previously designated Exhibit J and K drawings.
- Revises the datums shown on all Exhibit F and G drawings.
- Re-designates existing Exhibit L drawings as Exhibit F drawings and revises the datums on the drawings.

Conservation Measures

Because the ongoing operation of the Skagit Project has the potential to affect three federally-listed salmonid species, SCL has consulted with the National Marine Fisheries Service and U.S. Fish and Wildlife Service (the Services) pursuant to the Endangered Species Act (“ESA”) and has developed a set of conservation measures that would minimize the impact of the Skagit Project on the affected species. SCL has also met regularly with resource agencies on the Flow Coordinating Committee to formalize the four flow measures that would integrate the agencies’ interests in providing for conservation of protected salmonids. In addition, SCL has met with the Services to identify additional conservation measures in support of SCL’s interest in obtaining incidental take coverage with respect to hydropower activities and power impacts to listed salmonids in light of ongoing Skagit Project operations. In response to the resource agencies’ comments, SCL proposes to implement the flow measures detailed above as conservation measures to be incorporated into the license, making them mandatory for the remaining term of the license.

Consultation

As described in greater detail in Exhibit E and Appendix 6 (Consultation Documentation), this application has been prepared in consultation with Skagit Project stakeholders, as prescribed by 18 CFR § 4.38. Thus, SCL has been meeting with stakeholders since January 2008 to review the proposed amendment, to identify resource issues and impacts, and to develop protection, mitigation, and enhancement measures to address those issues and impacts. During this period, SCL has held a total of at least 45 meetings with various stakeholders; these meetings are listed in Exhibit E. In addition, because of the magnitude of the G2T Project and the Skagit Project's location within the Ross Lake National Recreation Area, SCL held a public meeting (see Appendix 6) of all stakeholders on September 24, 2010, in Newhalem, Washington, at which the proposed license amendment was fully described, and public comments were invited on the proposal, as contemplated by 18 CFR § 4.38(a)(7). Although this consultation exceeds the applicable requirements of 18 CFR § 4.38(a)(7), SCL is requesting a waiver of the Commission's three-stage consultation rules to the extent that the Commission may otherwise determine that those rules might have been applicable to the preparation of this application.

Water Quality Certification

On April 13, 2009, the Washington State Department of Ecology notified SCL that the proposed amendment would not require water quality certification pursuant to Section 401 of the Clean Water Act, 33 USC § 1341. A copy of Ecology's determination is attached to Exhibit E.

Conclusion

This proposed non-capacity-related amendment of license is in the public interest, because it would increase the generating efficiency and output of the Gorge Development portion of the Skagit Project without altering flows in the Skagit River, without increasing the nameplate capacities of the Gorge Development, and without requiring any change to the Gorge Development in the river or on the surface. This increase in efficiency would avoid the production of approximately 45,000 metric tons of carbon dioxide emissions each year. In addition, the incorporation of the previously voluntary flow measures into the Skagit Project license would provide significant conservation benefits to federally-listed salmonid species in the Skagit River. These measures would also assist in long-term efforts to conserve these listed species. For these reasons, Seattle City Light respectfully requests that the Commission approve the proposed license amendment.

Respectfully submitted,



Jorge Carrasco

Superintendent

Seattle City Light

This page intentionally left blank.

SUBSCRIPTION AND VERIFICATION

This Application for Non-Capacity-Related Amendment of License is executed in the

STATE OF WASHINGTON

COUNTY OF KING

By Jorge Carrasco, the Superintendent of Seattle City Light, P.O. Box 34023, Seattle, Washington 98124-4023, being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed this application this 30 day of June 2011.

SEATTLE CITY LIGHT

By: 
Jorge Carrasco
Superintendent

SUBSCRIBED AND SWORN TO before me, a Notary Public of the State of Washington, this 30 day of June 2011.


NOTARY PUBLIC

My Commission Expires:
June 12, 2012



United States of America

Before the
Federal Energy Regulatory Commission

)
Seattle City Light) Project No. 553
)

Statement Pursuant to 18 CFR § 4.32

- (1) Name and address of every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the Project:

Seattle City Light
P.O. Box 34023
Seattle, WA 98124-4023

- (2) Name and address of every county in which any part of the Project, and any federal facilities that would be used by the Project would be located:

The Skagit River Hydroelectric Project is located in Skagit, Snohomish, and Whatcom Counties, which have the following mailing addresses:

Skagit County
County Commissioners
1800 Continental Place, Suite 100
Mount Vernon, WA 98273

Snohomish County
County Council
3000 Rockefeller, M/S 609
Everett, WA 98201

Whatcom County
County Council
311 Grand Avenue, Suite 105
Bellingham, WA 98225

Lands Occupied by the Project include federal lands managed by:

North Cascades National Park Service Complex
Superintendent
810 State Route 20
Sedro-Woolley, WA 98284

Mount Baker–Snoqualmie National Forest
Supervisor
2930 Wetmore Avenue, Suite 3A
Everett, WA 98201

- (3) Name and address of every city, town, or similar local political subdivision in which any part of the Project, excluding transmission lines, and any federal facilities that would be used by the Project, would be located:

Unincorporated Town of Newhalem
Rockport, WA 98283

- (4) Name and address of every city, town, or similar local political subdivision that has a population of 5,000 or more people and is located within 15 miles of the Project dams:

There are no cities or towns with a population of 5,000 or more people within 15 miles of the Skagit Project dams.

- (5) Name and address of every irrigation district, drainage district, or similar special purpose political subdivision in which any part of the Project, and any federal facilities that would be used by the Project, would be located:

Skagit County Dike District 3

Attn: Darrin Morrison

19212 Morrison Road

Mount Vernon, WA 98274

- (6) Name and address of every irrigation district, drainage district, or similar special purpose political subdivision that owns, operates, maintains, or uses any Project facilities or any federal facilities that would be used by the Project:

No irrigation district, drainage district, or similar special purpose political subdivision owns, operates, maintains, or uses any Project facility or any federal facility used by the Project.

- (7) Name and address of every other political subdivision in the general area of the Project that there is reason to believe would likely be interested in, or affected by, the application:

City of Bothell

Attn: Bill Wiselogle

Director, Planning and Development

9654 NE 182nd Street

Bothell, WA 98011

City of Concrete

Attn: Rick Cisar

Planning Department

P.O. Box 39

Concrete, WA 98237

City of Darrington

1055 Cascade Street

Darrington, WA 98241

City of Lake Stevens
Attn: Becky Ableman
Planning Director
1820 Main Street
Lake Stevens, WA 98258

Marblemount (a census designated place)
North Cascades Visitor Information Center
P.O. Box 175
Marblemount, WA 98267

City of Marysville
Attn: Cheryl Dungan
Planning Manager
601 Delta Avenue
Marysville, WA 98270

City of Mill Creek
Attn: Tom Rogers
Interim Director, Community Development
15728 Main Street
Mill Creek, WA 98012

Town of Oso
Oso General Store
30230 Oso Loop Road
Arlington (Oso), WA 98223

Rockport (a census designated place)
North Cascades Visitor Information Center
P.O. Box 175
Marblemount, WA 98267

City of Snohomish
Attn: Corbitt Loch
Director, Planning and Development Services
116 Union Avenue
Snohomish, WA 98290

(8) Name and address of all Indian tribes that may be affected by the Project:

The Honorable Chairman
Upper Skagit Indian Tribe
25944 Community Plaza Way
Sedro-Woolley, WA 98284

The Honorable Chairman Sauk-Suiattle Indian Tribe
5318 Chief Brown Lane
Darrington, WA 98241

The Honorable Chairman Swinomish Indian Tribal Community
11430 Moorage Way
LaConner, WA 98257

The Honorable Chairman, Nlaka'pamux Nation Tribal Council
P.O. Box 430, 1632 St. Georges Road
Lytton, BC V0K 1Z0

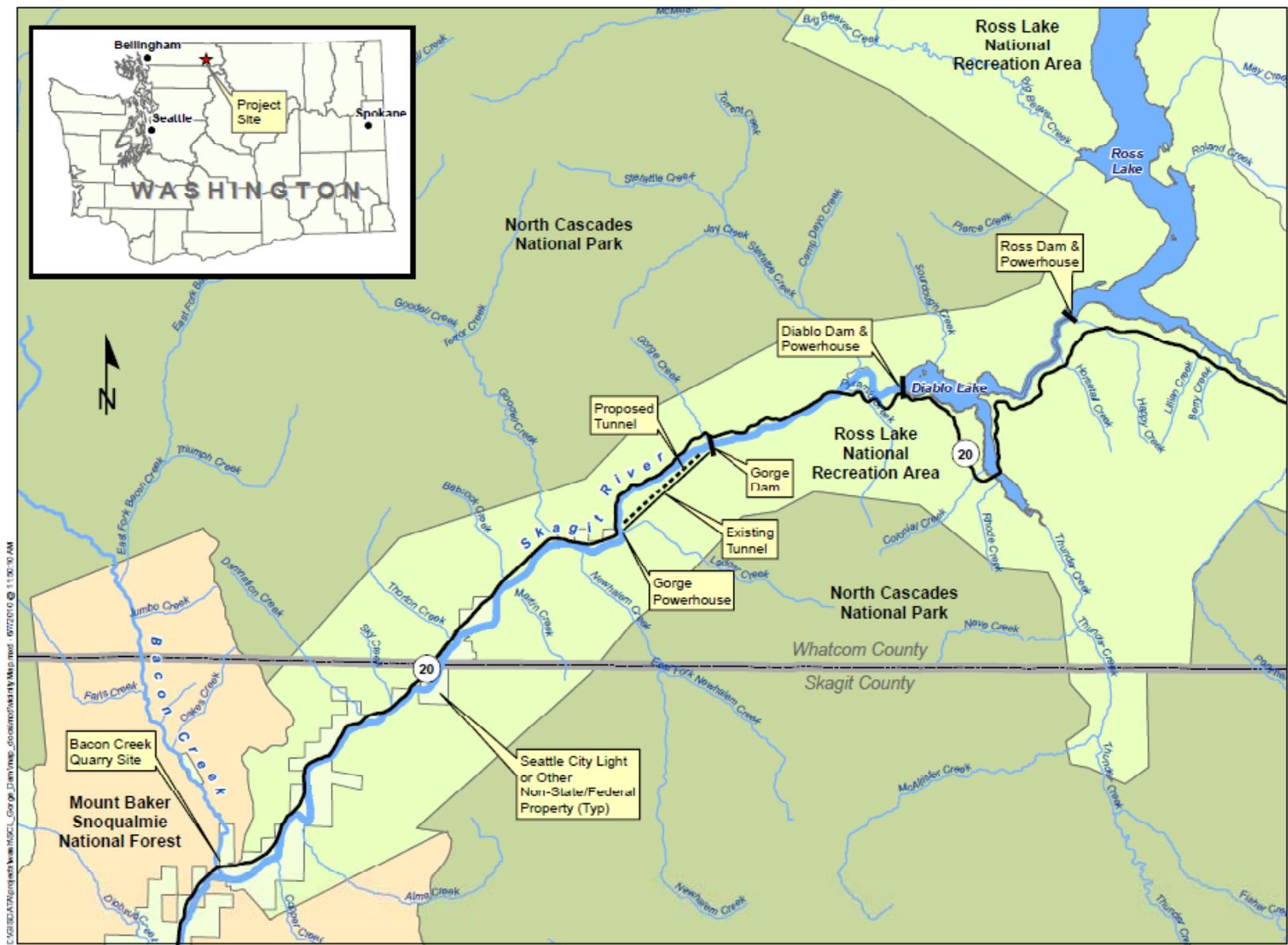


Figure IS-1. Project Vicinity Map

This page intentionally left blank.

Exhibit A – Project Description

Seattle City Light (SCL) owns three dams and hydroelectric power plants—the Gorge, Diablo, and Ross developments—on the Skagit River in northern Washington state. Together they are known as FERC Project No. 553, the Skagit River Hydroelectric Project, or simply the Skagit Project. Gorge, the downstream facility, is the first one that SCL built. The original power plant had three Francis turbine/generators. In the 1950s, SCL installed a fourth turbine/generator, Unit 24, in the powerhouse, and built Gorge High Dam.

Unit 24's hydraulic demand and the elevated head pressure from the new dam increased the water velocity in the 12,000-foot-long by 21.5-foot-diameter power tunnel between the dam and powerhouse. As a result, the frictional head losses in the tunnel became so great that the plant could not reach its generating capacity. To reduce the head loss and increase the efficiency of the powerhouse, SCL proposes building the Gorge 2nd Tunnel (G2T)—the subject of this Application for Non-Capacity-Related Amendment of License—alongside the existing tunnel. The two tunnels would operate simultaneously so that water would flow at about half the speed it does now. The reduction in velocity would, in turn, decrease the frictional head loss, and thereby produce more head pressure at the turbines. Because the powerhouse is generator-limited, the flow of water through the powerhouse and back into the Skagit River would not increase. The hydraulic capacity of the powerhouse (8,112 cubic feet per second [cfs]), the authorized installed capacity (158.825 megawatts [MW]), the generator nameplate capacity (207.5 MW) and the turbine nameplate capacity (199.2 MW) would remain the same.

Physical Composition

The 2nd tunnel would be bored through solid rock from the powerhouse to the dam using a tunnel boring machine. The tunnel would be round, 22 feet in diameter, and approximately 11,000 feet long. In the downstream direction, it would branch off the existing tunnel approximately 100 feet downstream from the intake at Gorge Reservoir and reconnect to the existing tunnel near the first branch in the manifold system that distributes water to the penstocks and four turbine/generators at the Gorge Powerhouse. As a result, all construction, except for the creation of a portal for the new tunnel adjacent to the powerhouse, would occur underground.

The 2nd tunnel would be unlined for most of its length except in areas where the rock was incompetent and at the two locations where the new tunnel connected with the existing tunnel. Geologic investigations to date indicate that the rock is massive and hard and that only a minimum amount of support should be required. A full plant outage of approximately 2-1/2 months duration would be required while connecting the two tunnels. During that time, the connections would be drilled and blasted, then lined with concrete. A concrete plug with an access hatch would be installed between the 2nd tunnel's portal and the lower connection with the existing tunnel. A rock trap would also be installed along the invert of the 2nd tunnel.

Spoils from the tunnel would be trucked 10 miles downstream and used to reclaim an SCL-owned quarry near Bacon Creek. When the tunnel excavation was complete, the spoil material in the quarry would be contoured and restored for wildlife habitat.

Water Surface Area and Elevation

Construction and operation of the 2nd tunnel would not affect the surface area, elevation, or gross storage capacity of the impoundment behind Gorge Dam.

Rated Capacity

No new turbines or generators would be installed, nor would the rated capacity of the existing turbine/generators be altered as a result of building the 2nd tunnel.

Primary Transmission Lines

The 2nd tunnel would not change the number, length, voltage, and interconnections of the primary transmission lines leading from the Gorge Powerhouse or any of the other powerhouses associated with the Skagit Project.

Transmission Equipment

No new mechanical or electrical equipment would be added to the Gorge Powerhouse.

Lands of the United States

Table A-1 lists the lands of the United States enclosed within the project boundary. To construct the 2nd tunnel, SCL proposes to adjust the FERC boundary and add a total of 1.21 acres to the FERC area. This addition would include 1.06 acres at the downstream end of the new tunnel, where the alignment would veer outside the existing FERC boundary for approximately 185 feet as the tunnel boring machine turned parallel to the existing tunnel. The 1.06 acres near the Gorge Powerhouse would also contain land above the portal that would need to be scaled and reinforced with rock bolts to create a safe job site.

At the upstream end of the new tunnel, SCL would add 0.15 acre, the remainder of the 1.21 acres, to the FERC area where the new tunnel would pass out of the existing boundary for approximately 95 feet. All lands to be added are inside the Ross Lake National Recreation Area and are administered by the U.S. Department of the Interior's North Cascades National Park.

While preparing new maps for Exhibit G, SCL discovered 4.24 acres of new federal land inside the transmission line right-of-way that it did not know about. The acreage was part of a larger piece of land outside the right-of-way that the U.S. government purchased in 1998. SCL is adding the 4.24 acres to Table A-1 as Entry No. 1.

SCL also found two entries in Table A-1 for Government Lot 2 of Sec 20 T37N R12E. One of the entries had been transposed. The correct acreage for that piece of land is now listed only once as Entry No. 22 in the table.

Entries 24 and 25 in Table A-1 correct the final error found by SCL. The previous tabulation listed these two interfused areas as being in the same section of land, when in fact they are in neighboring sections. Their combined acreage was also listed as 16.47 acres, which is 0.3 acre larger than what was previously stated. In the new Table A-1, the areas now sum to the correct value of 16.17 acres.

Taking the above corrections into account, and adding the 1.21 acres of new federal land needed for the Gorge 2nd Tunnel, the total area of federal lands within the Skagit Project's FERC area would be 19,281.93 acres.

This page intentionally left blank.

Table A-1. Lands of the United States Enclosed within the Project Boundary

Entry No.	Description	Section/ Township/Range	Right-of-Way Acreage	Non Right-of-Way Acreage	Exhibit G Sheet
1	Ptn Gov Lot 6	Sec 17 T33N R10E	4.24		31, 32, 33
2	Ptn. NW NE	Sec 12 T35N R10E	0.98		45
3	Ptn. NW SW	Sec 29 T36N R11E	0.84		47, 48
4	Ptn. Gov. Lot 3	Sec 20 T36N R 11E	11.78		47, 48
5	Ptn. SW NE	Sec 21 T36N R11E	0.02		48, 49
6	Ptn. NE NE	Sec 21 T36N R11E	2.20		48, 49
7	Ptn. NW SW, Gov. Lot 7	Sec 15 T36N R11E	13.50		48, 49
8	Ptn. Gov. Lot 2	Sec 15 T36N R11E	13.12		49, 50
9	Ptn. Gov. Lot 3	Sec 15 T36N R11E	0.08		49
10	SE SW	Sec 10 T36N R11E	Area included in Entry #8		50
11	Ptn. SE NE	Sec 10 T36N R11E	2.66		50
12	Ptn. SW SE, NE SE, Lot 1	Sec 2 T36N R11E	27.46		50, 51
13	Ptn. Gov. Lot 12, 14, 15	Sec 1 T36N R11E	20.28		51, 52
14	Ptn. Gov. Lot 1 NE SW, SW NE, SE SW, SE NE, NE NE	Sec 36 T37N R11E	40.50		51, 52, 53
15	Ptn. Gov. Lot 1, 2, SE SW	Sec 36 T37N R11E	16.13		51, 52, 53
16	Ptn. S NE, NE NE	Sec 36 T37N R11E	Area included in Entries #14 and #15		51, 52, 53
17	Ptn. Gov. Lot 7	Sec 30 T37N R12E	2.71		52, 53
18	Ptn. Gov. Lot 5	Sec 30 T37N R12E	6.50		52, 53
19	Ptn. Gov. Lot 2, 3	Sec 20 T37N R12E	47.90		53, 54
20	Ptn. Gov. Lot 2, 3	Sec 29 T37N R12E	Area included in Entry #19		53, 54
21	Ptn. Gov. Lot 3, NE NE, SW NE	Sec 30 T37N R12E	Area included in Entry #19		53, 54
22	Ptn. Gov. Lot 2	Sec 20 T37N R12E	9.61		54
23	Newhalem NE SW	Sec 21 T37N R12E	1.36		54
24	Newhalem Gov Lot 9, 11	Sec 21 T37N R12E		13.86	54
25	Newhalem NE NW	Sec 28 T37N R12E		2.31	54
26	Newhalem Gov Lot 4, 5, 12	Sec 21 T37N R12E		13.68	54

Entry No.	Description	Section/ Township/Range	Right-of-Way Acreage	Non Right-of-Way Acreage	Exhibit G Sheet
27		Sec 11, 12, 14, 15, 20, 21, 22, 28, 29 T37N R12E		Area included in Entry #35	54, 55, 56
28		Sec 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 22, 23 T37N R13E		Area included in Entry #35	56, 57, 58
29		Sec 4, 5, 6, 9, 10 T37N R14E		Area included in Entry #35	58, 59
30		Sec 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 23, 24, 25, 36 T38N R13E		Area included in Entry #35	58, 59, 60, 61
31		Sec 6, 7, 18, 19, 20, 29, 30, 31, 32 T38N R14E		Area included in Entry #35	58, 59, 60, 61
32		Sec 1, 2, 11, 12, 13, 25, 36 T39N R13E		Area included in Entry #35	60, 61, 62
33		Sec 6, 7, 8, 17, 18, 19, 20, 29, 30, 31 T39N R14E		Area included in Entry #35	60, 61, 62
34		Sec 2, 3, 4, 9, 10, 11, 14, 15, 16, 22, 23, 24, 25, 26, 34, 35, 36 T40N R13E		Area included in Entry #35	62, 63
35		Sec 34, 35 T41N R13E		19,014.00	63
36	Sauk River Boat Launch (USFS)	Sec 17 T33N R10E		5	31, 32
37	Marblemount Boat Launch (USFS)	Sec 18 T35N R11E		3	44
38	North Cascades Environmental Learning Center (NPS)	Sec 4 T37N R7E		7	58
	Sub-total		221.87	19,058.85	
	Total existing acreage of federal land			19,280.72	
39	Additions at Gorge 2nd Tunnel Upstream and Downstream Locations			1.21	54, 55
	Total acreage of federal land after additions for the Gorge 2nd Tunnel			19,281.93	

Exhibit B – Project Operation and Resource Utilization

Alternative Alignments

The terrain in the Skagit Project area is mountainous and the flat area northwest of the Gorge Powerhouse is the only practical place to start tunneling and stage the construction. Therefore, SCL only considered siting the new tunnel along the northwest side of the existing tunnel. However, several variations of the basic project siting and alignment were assessed. SCL's design consultant evaluated six different specific locations for the tunnel portal within the basic staging area. The proposed location would present the fewest rock fall hazards to personnel working outside the tunnel, require the least amount of scaling and rock fall protection, and provide the quickest entry into competent bedrock.

Four different alignments for the downstream connection to the existing tunnel were also examined. As a result, SCL would connect the new tunnel to the existing tunnel approximately 100 feet upstream from the branch that leads to Generating Unit 24. Connecting the new tunnel there would provide the most efficient path for water to travel out of the new tunnel and into the various penstocks. A water transient study (see Appendix 4) showed that the new tunnel would not need to be directly connected to the existing surge tank.

In addition, SCL initially considered constructing the new tunnel 100 feet horizontally from the existing tunnel. That spacing, however, would have put the new tunnel outside the existing FERC boundary for its entire length and SCL was concerned that it would not have been able to adjust the FERC boundary where it intersects and runs inside the Stephen Mather Wilderness Area. Fortunately, the competent rock structure along the alignment (See Appendix 3, Geotechnical Report) makes it safe to bore the new tunnel 50 feet horizontally from the existing tunnel, and by doing so, the new tunnel (with the exception of short sections near the portal and the upstream connection location) would lie within the existing FERC boundary for its entire length.

Alternative Designs, Processes, and Operations

After choosing the proposed tunnel alignment, SCL conducted a tunnel diameter optimization study (see Appendix 4) as part of the preliminary design phase. Hydraulic designers constructed computer models of the Gorge Powerhouse with the 2nd tunnel varying in diameter from 14 feet to 22 feet. The models calculated head losses between the intake and turbines for a range of flows between 1,000 cfs and 8,112 cfs. The head loss data were used to calculate plant output power. SCL then combined the power

results for the 18-, 20-, and 22-foot-diameter tunnels with hourly flow data from 24 years (1986 through 2009) to estimate the energy production during both high load and low load hours. The energy data were then converted into revenue estimates for all three tunnel sizes; a cost-benefit analysis of the financial data led to the proposal of building a 22-foot-diameter tunnel.

In preparation for environmental reviews and agency consultations, SCL studied the treatment and disposal of water generated by tunneling and stormwater runoff (see Appendix 1, Water Management Plan, and Appendix 2, Water Quality Report). Water from the tunnel would be collected at the portal site. It would then be conveyed via a pipe across the Skagit River a mile downstream for treatment and dispersion into a large natural depression for infiltration into the ground. Stormwater runoff from off-site would be intercepted before it entered the portal area and be routed to the Skagit River. Stormwater runoff from the jobsite would be collected and treated in a settling pond before being discharged to the Skagit River.

Powerhouse Operation, Annual Plant Factor

The Gorge Powerhouse is partially automated. SCL can start and stop the turbine/generators and regulate the load by remote control from Seattle. SCL can also operate Spill Gate # 1 on Gorge Dam from Seattle. All other functions are done manually.

The existing plant factor at Gorge Powerhouse is 0.60. This is based on a maximum output of 177 megawatts (MW) and an average annual output of 106.4 MW taken from 24 years of hourly data between 1996 and 2009. The new 22-foot-diameter tunnel would lower the plant factor to 0.57 based on a calculated maximum output of 205 MW and calculated average annual output of 116 MW. The calculation of annual output assumes the flow regimen would stay the same after the new tunnel was operational.

Operation during Adverse, Mean, and High Water Years

SCL operates the Gorge Powerhouse and the Skagit Project pursuant to the terms of the FERC license and the parameters set forth in the Fisheries Settlement Agreement (FSA). The FSA is one of eight settlement agreements the Commission approved when it issued a new license for the Skagit Project on May 16, 1995. The FSA establishes requirements for flows downstream of Gorge Powerhouse; flow releases and limits to protect salmon and steelhead spawning, egg incubation and juvenile rearing; operation during dry water (adverse) years and periods of flooding (high water); advance scheduling of

hourly generation; field monitoring; and measures for steelhead production, Chinook salmon research, chum salmon habitat, sediment reduction, and trout protection and production.

The FSA also established a Flow Coordinating Committee made up of eight members in addition to SCL, to oversee implementation of the flows prescribed by the FSA and the FERC license. This collaboration led to the development of four flow measures that go beyond current flow provisions of the FSA and provide greater protection for fishery resources. These four flow measures were voluntarily implemented by SCL in 1995 and have been in effect ever since. They are as follows:

1. Chum salmon spawning default start date of November 1 (instead of November 15 currently);
2. Salmon fry stranding protection will start on January 1 instead of February 1;
3. Downramping rates below the Gorge Powerhouse limited to < 3,000 cfs/hr from October 16 to December 31 each year; and
4. November/December chum salmon minimum incubation flows will be increased beyond current levels as reflected in a revised Table C-3 of the Fisheries Settlement Agreement (see Appendix 5).

This amendment would incorporate these four flow measures into the license for the Skagit Project. By doing so, SCL would formally change its operation procedures for the Gorge Powerhouse and the Skagit Project. However, because SCL voluntarily implemented the flow measures in 1995, the operation of Gorge Powerhouse and the Skagit Project would not actually change.

Appendix 5 of this amendment application shows “track changes” versions of Article 404 of the Project license and Section 6.3 of the FSA that includes the four flow measures.

Dependable Capacity and Average Annual Energy Production

SCL estimates that the new dependable capacity of the Gorge Powerhouse would be approximately 86 MW after construction of the 2nd tunnel. This new dependable capacity is based on computer hydraulic modeling and SCL’s 24-year record of hourly flow data from 1986 through 2009. The dependable capacity of 92.5 MW given in the Application for New License, Skagit River Hydroelectric Project (FERC Project No. 553) Washington, Volume I, by City of Seattle, Washington, October 1977, revised December 1, 1978, was based on a critical period between 1928 and 1932 that SCL now considers obsolete.

A 22-foot-diameter 2nd Tunnel would increase energy production at the Gorge Powerhouse approximately 55,800 MWh each year². Gorge currently produces an average of 928,600 MWh per year, so with the addition of the new tunnel, the yearly average would rise to about 984,400 MWh.

Minimum, Mean, and Maximum Recorded Flows

The minimum recorded flow at the Gorge Powerhouse intake is 1,032 cfs. The mean recorded flow at the intake is 4,270 cfs, and the maximum is 32,213 cfs. This is for a 24-year period of record from 1986 through 2009 and includes water flowing through the powerhouse and over the spillways at the dam.

The critical streamflow used to determine the dependable capacity is 3,121 cfs. This is the average streamflow over the critical period of December 2000 through January 2001. The period of highest loads on the Gorge Powerhouse occur during the December through January time period. The year 2001 was the second driest year on record and is the driest year that has occurred since all three dams on the Skagit River were completed. The average flow for this same time period was 3,141 cfs at the Newhalem Gauge, USGS 12178000 Skagit River at Newhalem, Washington. The Newhalem Gauge is downstream from the Gorge Powerhouse.

Monthly flow duration curves for the Gorge Reservoir are included below (see Figures B-1 through B-12). The curves are based on the 24-year period of record of hourly flows through the Gorge Powerhouse and over the Gorge Dam's spillways from 1986 through 2009. Because SCL attempts to maintain the surface elevation of the Gorge Reservoir at a constant elevation, these flows are a good approximation of both the inflow and outflow of the reservoir.

² This more precise number for yearly energy production (55,800 MWh) was used for calculation purposes. Elsewhere in this document, "approximately 56,000 MWh" is used to describe yearly energy production.

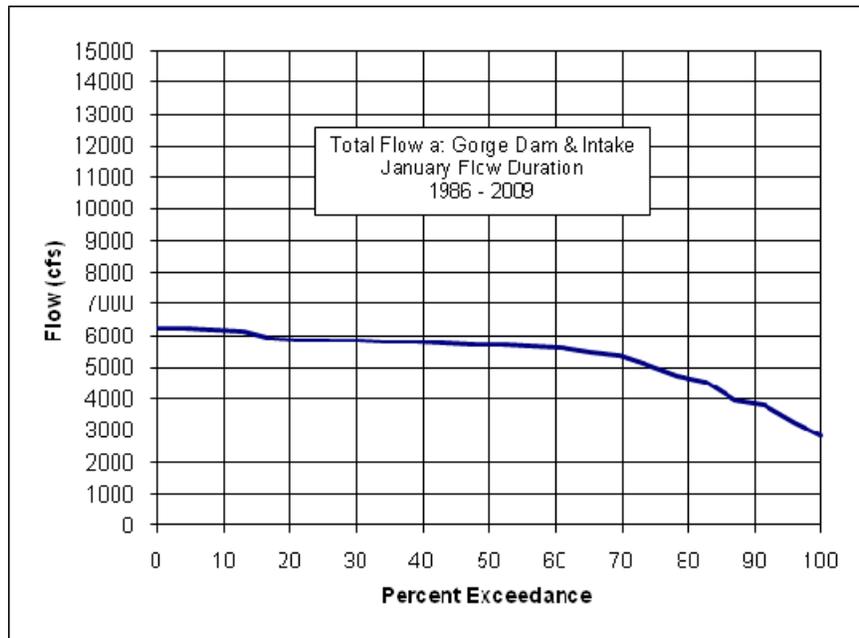


Figure B-1. Monthly Duration Curve for January

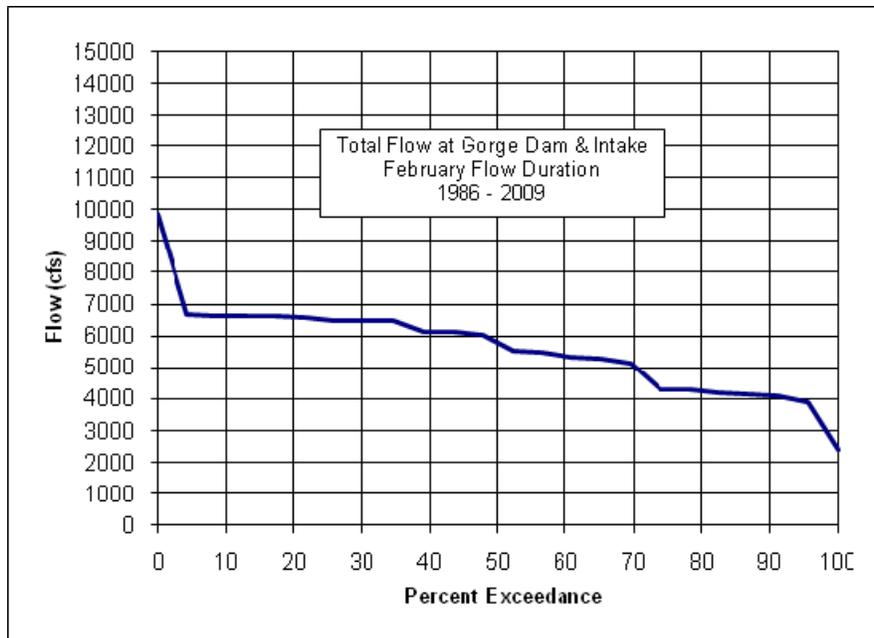


Figure B-2. Monthly Duration Curve for February

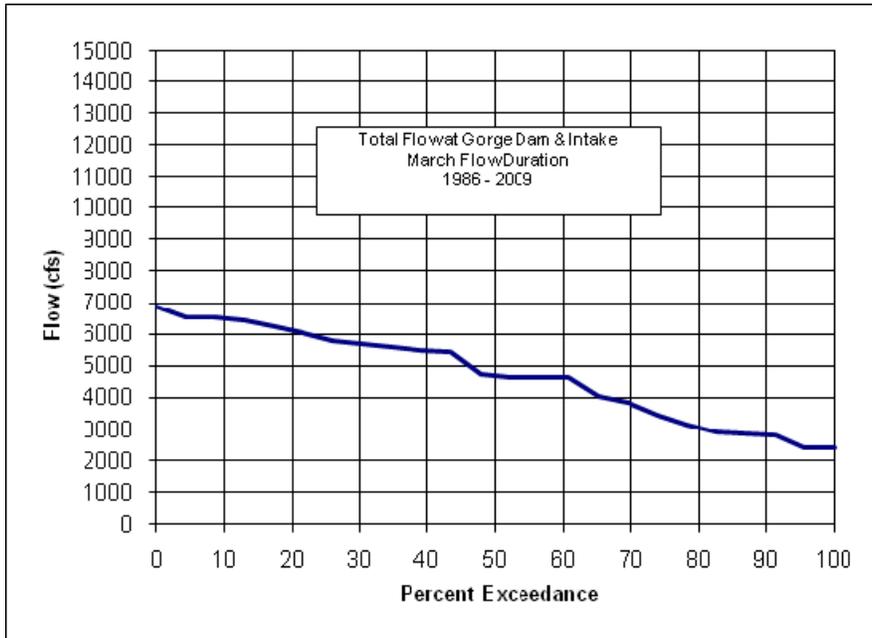


Figure B-3. Monthly Duration Curve for March

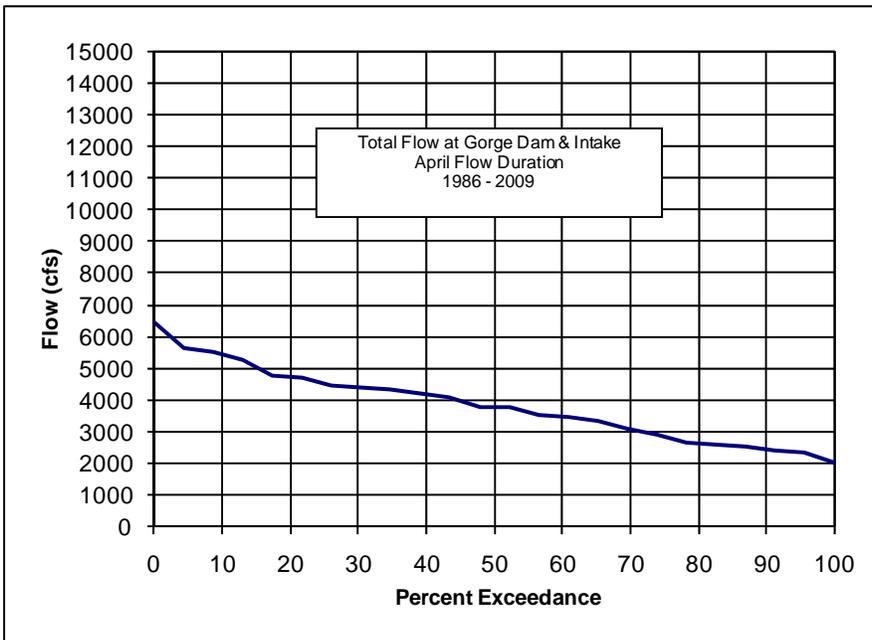


Figure B-4. Monthly Duration Curve for April

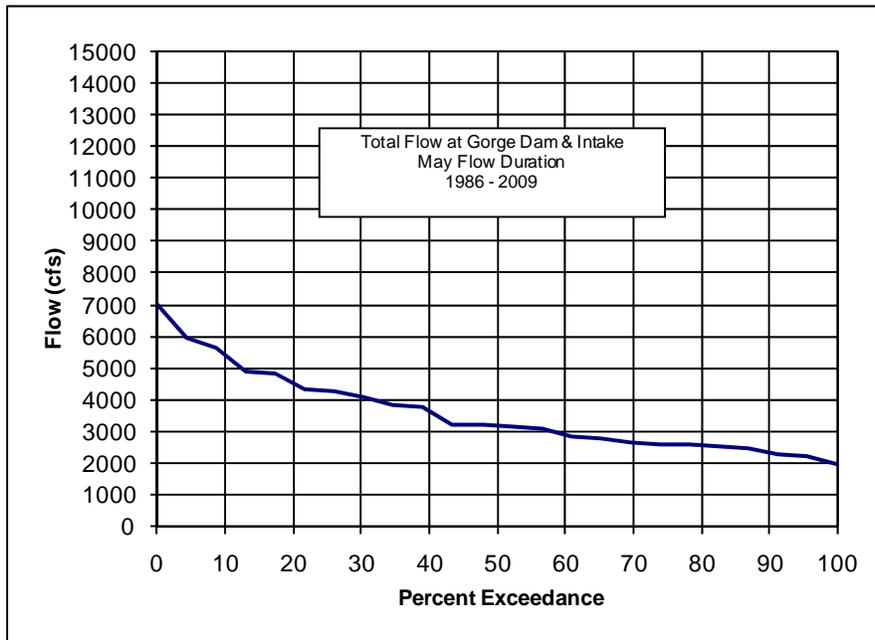


Figure B-5. Monthly Duration Curve for May

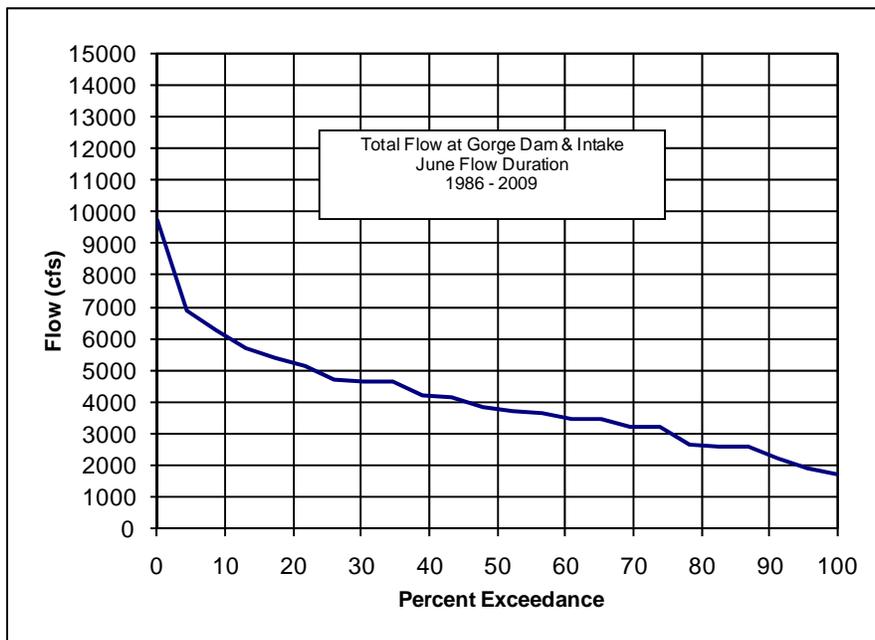


Figure B-6. Monthly Duration Curve for June

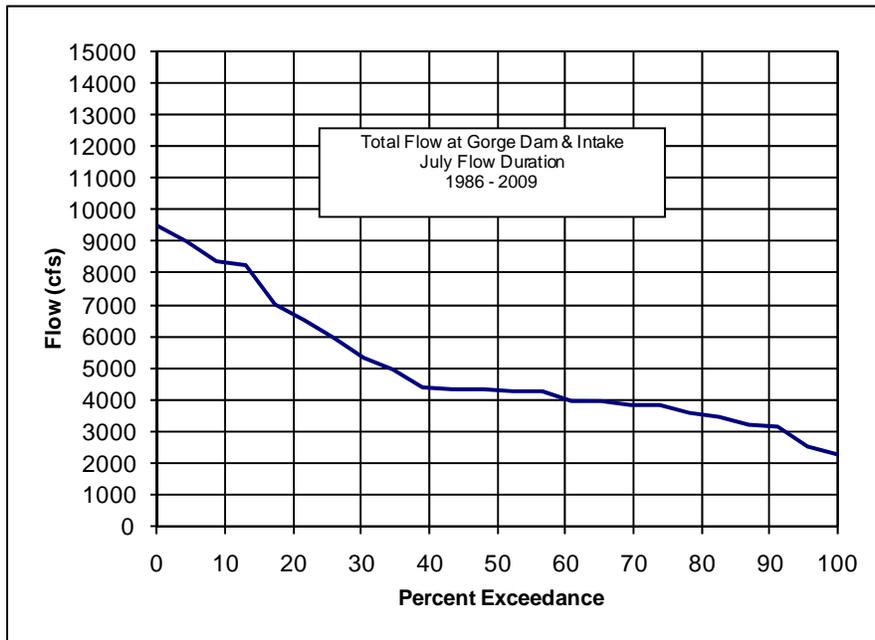


Figure B-7. Monthly Duration Curve for July

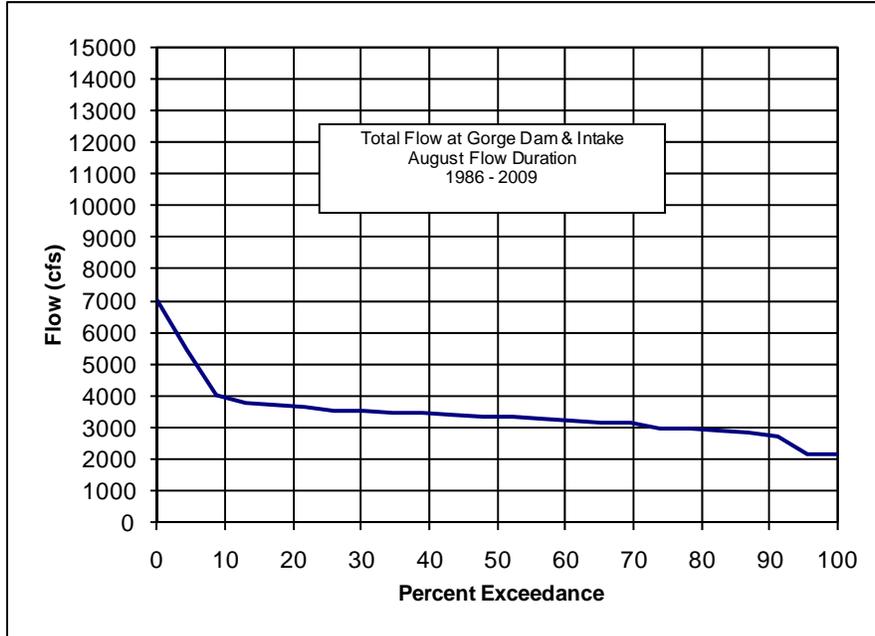


Figure B-8. Monthly Duration Curve for August

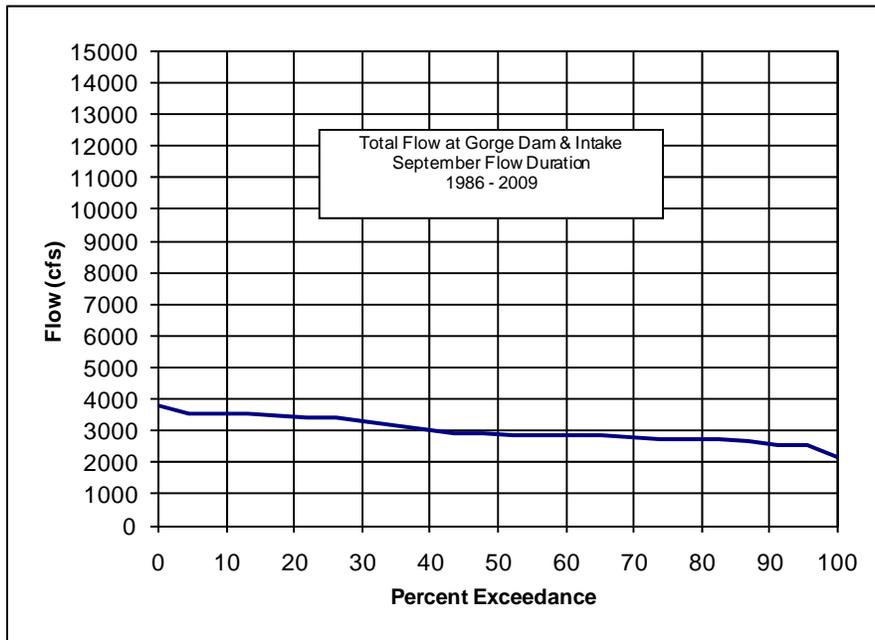


Figure B-9. Monthly Duration Curve for September

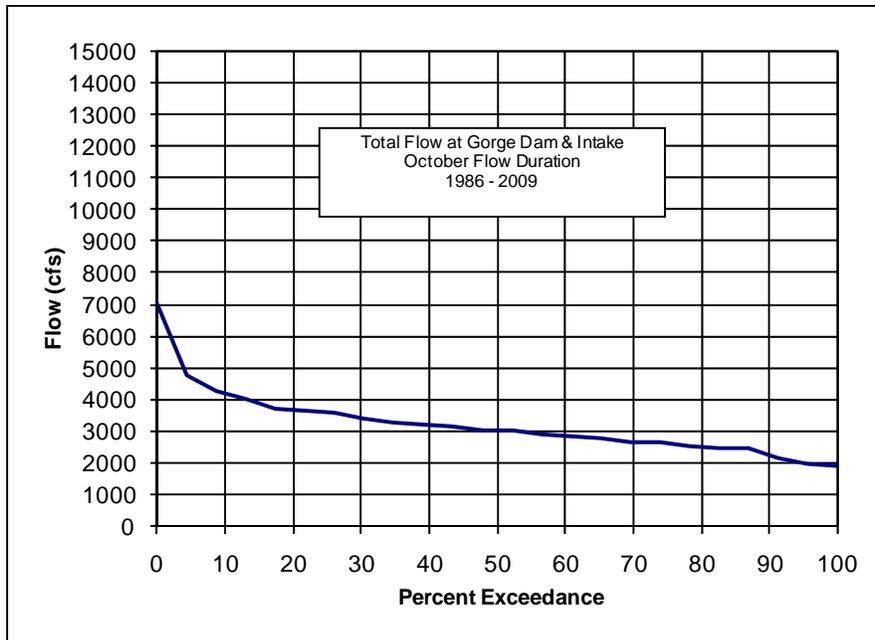


Figure B-10. Monthly Duration Curve for October

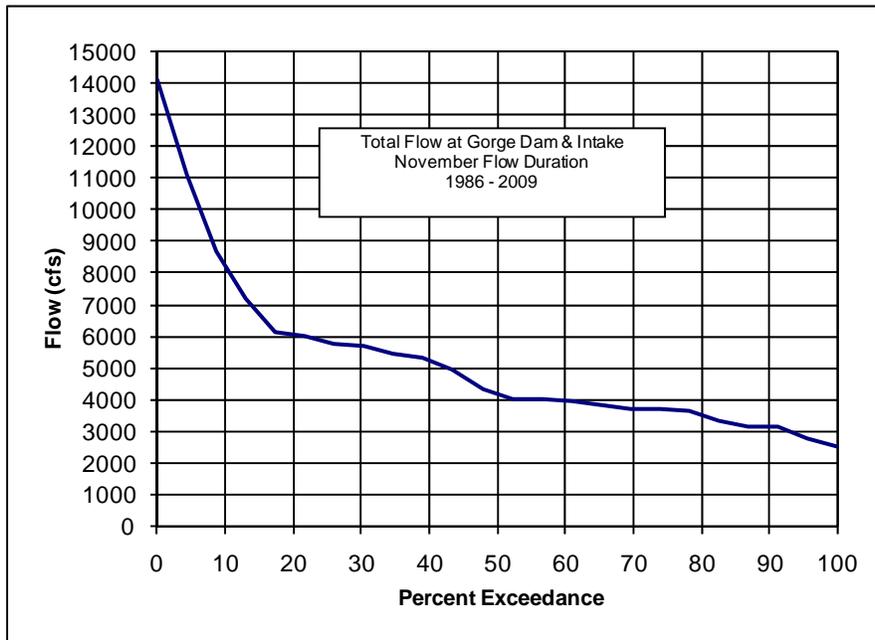


Figure B-11. Monthly Duration Curve for November

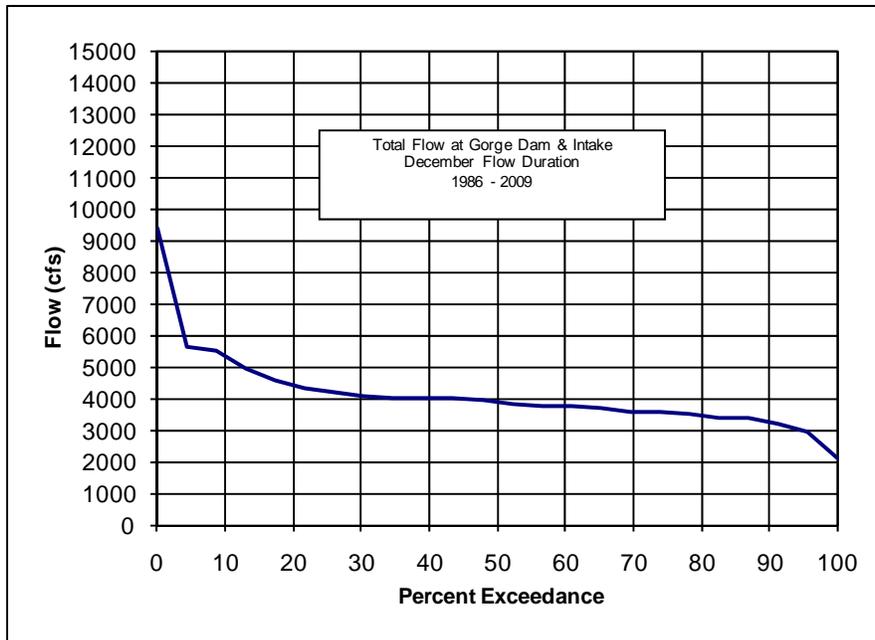


Figure B-12. Monthly Duration Curve for December

Area-Capacity Curve

The reservoir behind Ross Dam, with a usable storage volume of 1,052,000 acre-feet, provides storage for Ross, Diablo, and Gorge Powerhouses. Construction of the 2nd tunnel would not alter Ross’s area-capacity curve or its rule curve. Neither would the G2T change Gorge reservoir’s storage volume. The Gorge reservoir has 7,100 acre-feet of usable storage volume and its area capacity curve is shown in Figure B- 13.

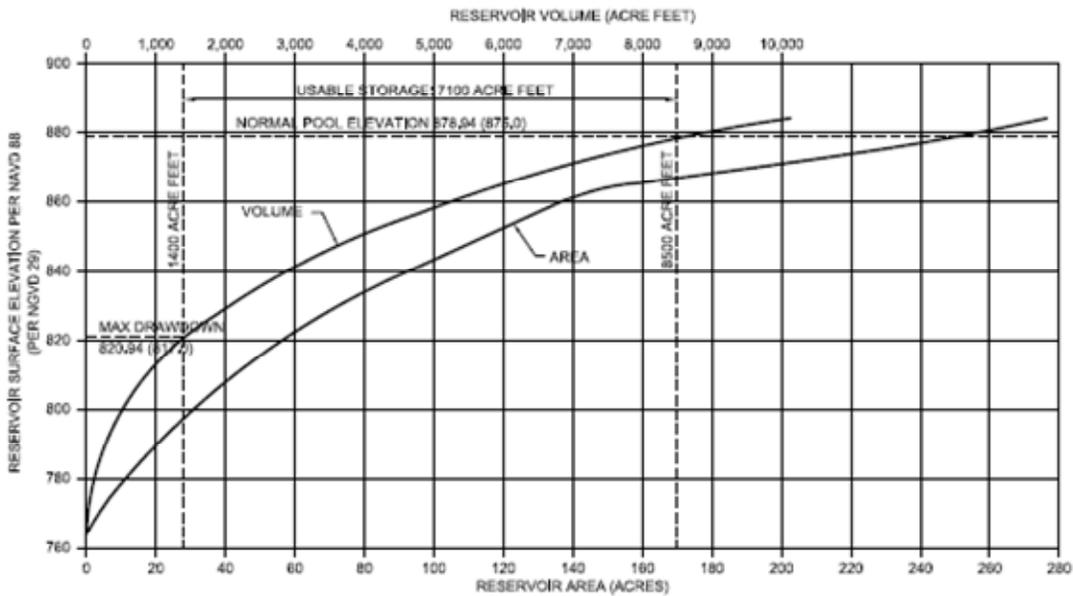


Figure B-13. Gorge Reservoir Area – Capacity Curves

Estimated Minimum and Maximum Hydraulic Capacities and Efficiencies

The current FERC License for Project 553 sets the minimum flows from the Gorge Powerhouse into the Skagit River. These would not be changed by the G2T. Because the Gorge Powerhouse is generator limited, the G2T will not affect the maximum hydraulic capacity either. The G2T would increase the Gorge Powerhouse’s efficiency by an estimated 2.0% at mean flows of 4270 cfs. Table B-1 lists the capacities, efficiencies, and generator output for the Gorge Powerhouse for minimum and maximum hydraulic capacities with and without the new 22-foot-diameter 2nd tunnel. The G2T will not alter the capacities, efficiencies, and outputs at one-half, full and best gates of the individual units.

Table B-1. Hydraulic Capacities and Efficiencies of Gorge Powerhouse

	Minimum Hydraulic Capacity			Maximum Hydraulic Capacity		
	Flow cfs ²	Efficiency %	Total Gen. Output MW	Flow cfs ⁴	Efficiency %	Total Gen. Output MW
Predicted Data for Gorge Powerhouse with 22-foot-Diameter 2nd Tunnel¹	1,500	89.0	42.9	8,112	78.6	205
Predicted Data for Existing Gorge Powerhouse¹	1,500	89.0	42.9	8,112	69.9	182.4
Actual Data for Existing Gorge Powerhouse	1,500	90.74	43.1 ³	8,112	68.8	177 ⁵

1. The predicted data comes from a computer model of the Gorge Powerhouse used in the preliminary analysis and design of the Gorge 2nd Tunnel.
2. Minimum flow restrictions per the Fisheries Settlement Agreement vary with month; 1,500 cfs is the minimum of all months.
3. The measured output for minimum flows varies depending on what turbine generators are being used and the elevation of the reservoir. A typical value for output would be 43.1 MW.
4. The peak flow through the powerhouse occurred on 11/26/2006 at hour 1300 during a high water event while flood water was being spilled at the dam and all turbine generators were running at full gate.
5. This is the generator peak flow output recorded on 11/26/2006.

Tailwater Rating Curve and Powerhouse Capability Versus Head

The G2T would have no impact on the tailwater rating curve. Because a tailwater rating curve is not shown in the current FERC License for Project 553, one is provided in Figure B-14 below. Figure B-15 shows calculated curves for powerhouse capability versus head for the Gorge Powerhouse after the addition of the G2T.

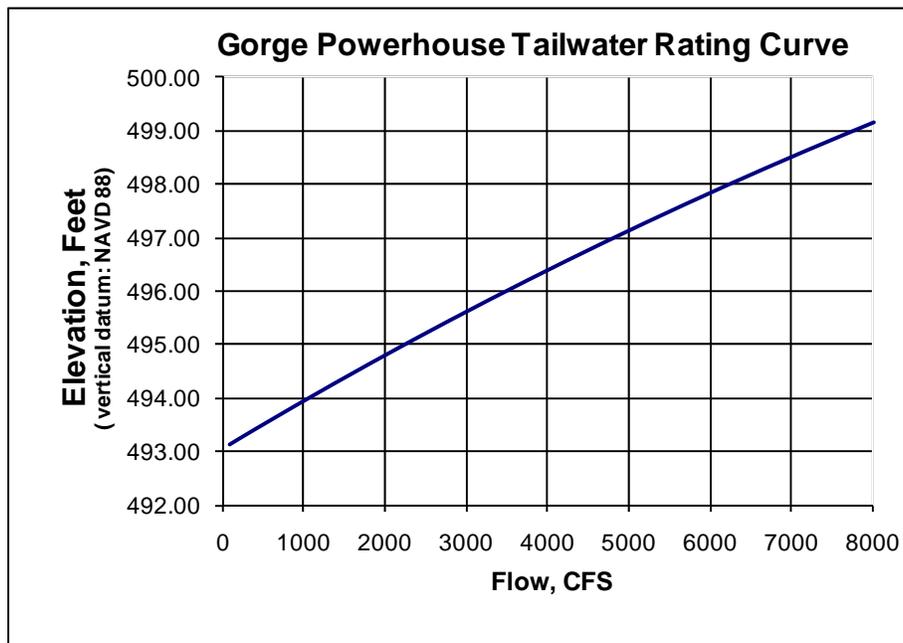


Figure B-14. Tailwater Rating Curve

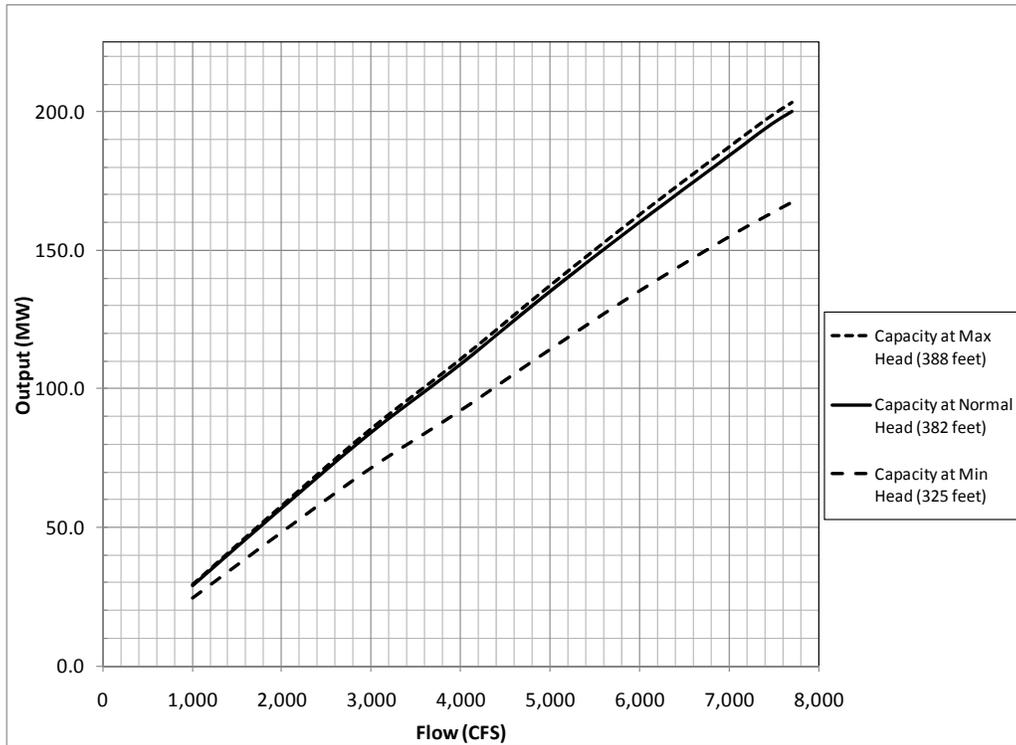


Figure B-15. Powerhouse Capability versus Head

System and Regional Power Needs

Both system and regional power needs are expected to grow over the next 10 years. At the same time, SCL must comply with Washington State’s Renewable Portfolio Standard (I-937). Incremental power produced by an efficiency improvement such as the 2nd tunnel at Gorge would qualify as an eligible renewable resource for SCL.

Load Curves and Tabular Data

Figure B-16 shows SCL’s system load forecast graph and tabular data for 2010 through 2019, inclusive, and Figure B-17 shows the regional load forecast graph and tabular data for the same period.

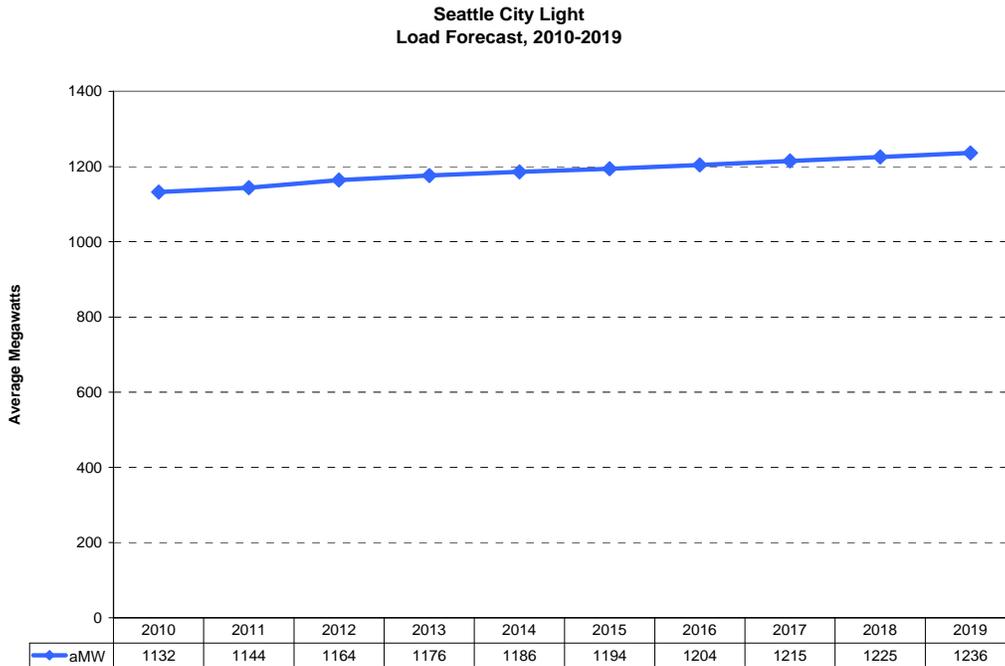


Figure B-16. System Load Forecast Graph and Tabular Data

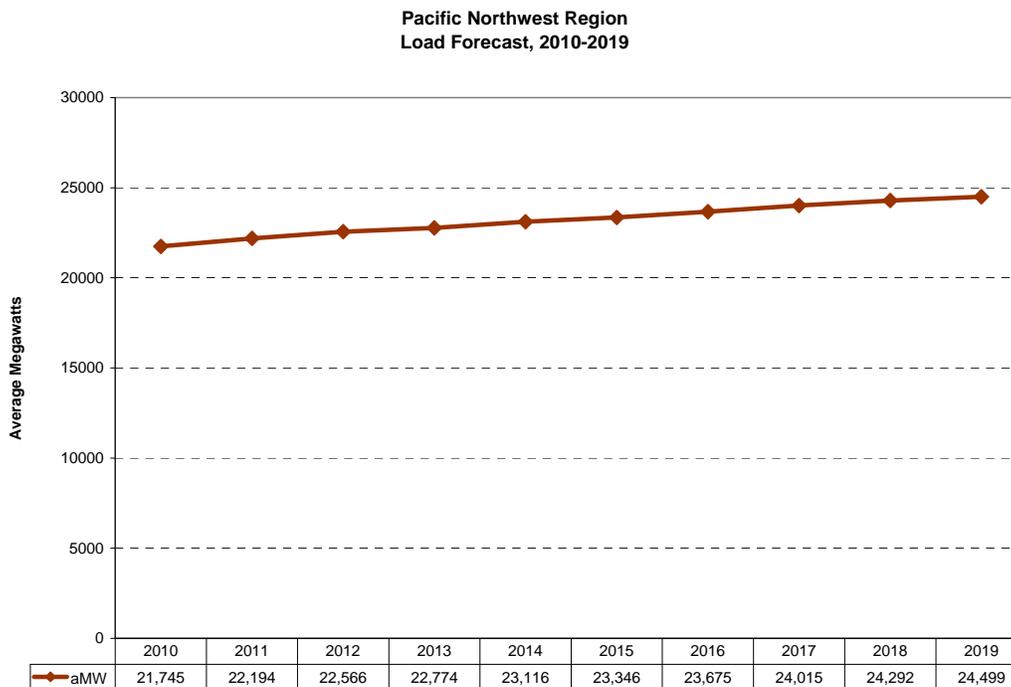


Figure B-17. Regional Load Forecast Graph and Tabular Data

Conservation and Rate Design Programs

Conservation was introduced into SCL's resource mix over 30 years ago and has remained the resource of first choice for SCL. From 1977 through 2007, SCL's conservation programs saved over 10 million MWh by increasing the efficiency of electricity use in homes, businesses, and industries.

SCL's rates are designed to reflect each customer class's share of the cost of providing service. Non-residential customer classes are defined by level of maximum annual demand. SCL does not offer incentive rates for the purpose of encouraging consumption. In the distant past, SCL offered such rates: declining block rates for some non-residential customers, and all-electric rates for residential customers. Because construction of the 2nd tunnel would be an efficiency improvement and would be a qualified renewable resource under state law, it would help lower rates with respect to meeting state regulatory requirements.

Amount of Power to be Sold and Proposed Purchaser

Power from the Skagit Project is used to serve SCL's retail customers, or it may be sold into the wholesale power market during periods of high runoff when it is not needed for SCL's electric loads. A small portion of Skagit Project output is for project use (about 0.3% of annual system load).

Statement of Plans for Future Development

SCL has no plans for future development on the Skagit River or for Project 553.

Exhibit C – Construction Schedule

Commencement and Completion Dates

Construction of the G2T Project is currently scheduled to commence in May 2013 with the award of contract. The overall construction period would be approximately 30 months, which would result in a completion date of November 2015. Figure C-1 shows the overall construction schedule.

Proposed Commencement Date of First Commercial Operation

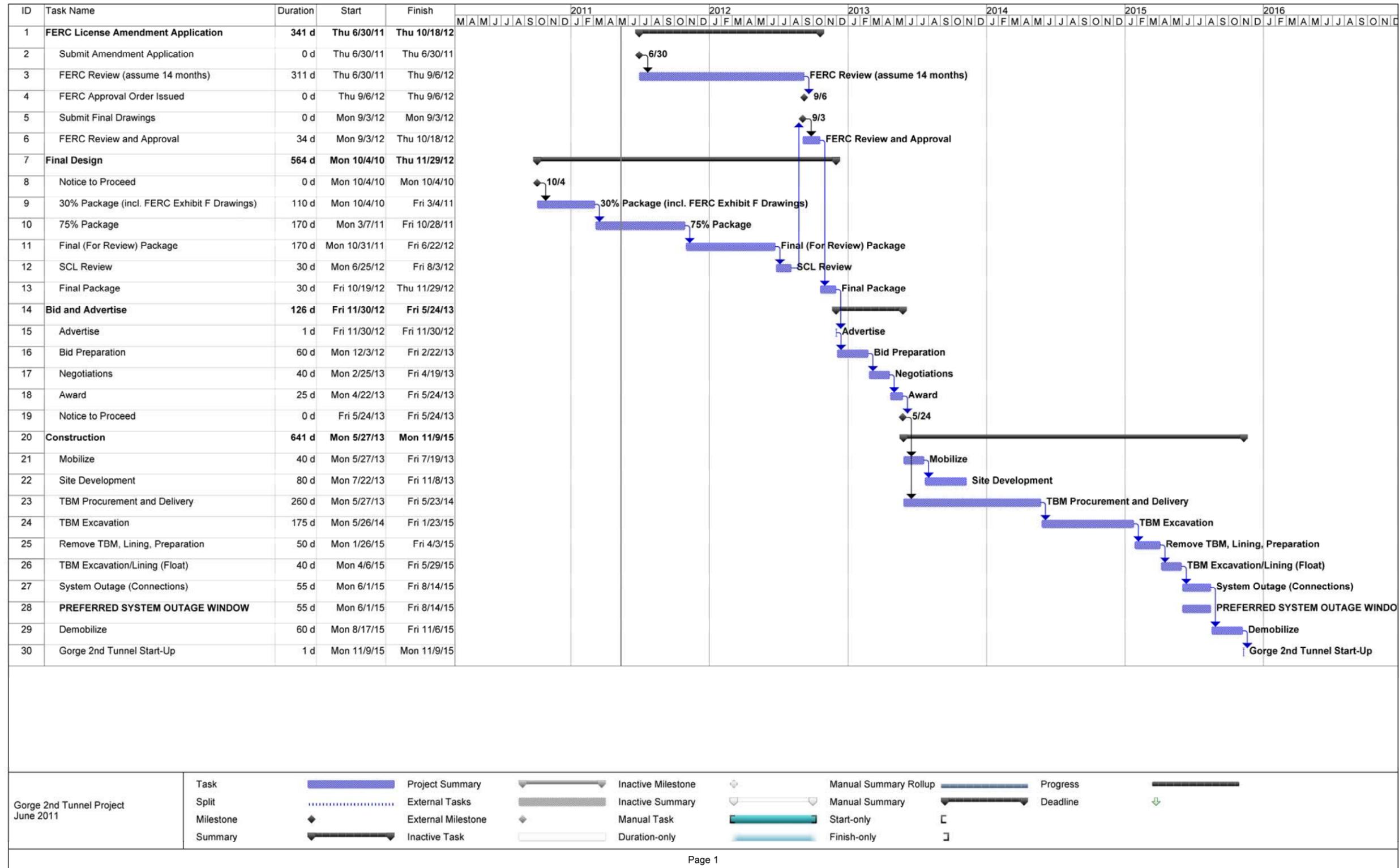
First commercial operation using the 2nd tunnel would occur following completion of the upstream and downstream connections between the two tunnels. The connection work would require a system outage of approximately 8 to 10 weeks, which would be scheduled to take place in the SCL-preferred window of June through August 2015. Accordingly, first commercial operation with the new system configuration would be scheduled for November 2015.

Chronology of Original Completion Dates

The G2T Project would not consist of previously constructed, unlicensed water power structures or facilities.

This page intentionally left blank.

Figure C-1. Construction Schedule



This page intentionally left blank.

Exhibit D – Project Costs and Financing

Estimated Costs

- There would be no land or water rights-associated costs arising from the G2T Project.
- A construction cost estimate for the G2T Project, assuming a 22-foot-diameter tunnel, was prepared during the preliminary engineering phase. This estimate indicated a probable unescalated construction bid, in 2009, of \$56.7 million. This amount includes an allowance for contractor contingencies, but does not include any owner contingency. Owner contingency to allow for project definition and bidding climate, at time of advertisement, could be as much as 25%.
- Indirect construction costs, which include equipment ownership, mobilization, maintenance and supervision, overhead, bonds and insurance, contractor markup, financing charges, and contractor contingencies, are estimated at approximately \$39.7 million. This amount forms part of the overall construction cost estimate of \$56.7 million.
- Interest during construction would be consistent with other SCL capital improvement projects at 4.909%.
- Overhead, construction, and contingency costs are detailed above. Legal expenses to be incurred are estimated at \$100,000.

Previously Constructed, Unlicensed Water Power Structures or Facilities

The G2T Project does not consist of previously constructed, unlicensed water power structures or facilities.

Licensee Applying for a New License and Not a Municipality

This regulation is not applicable because Seattle City Light is a municipality and is not applying for a new license.

Estimated Average Annual Cost of the Total Project

Estimated average annual cost of the total G2T Project is expected to be limited to the cost of tunnel inspections, which are required once every 10 years. Each tunnel inspection has a cost of approximately \$4,000. Annual cost, therefore, is assumed to be \$400.

Estimated Annual Value of Project Power

The efficiency improvement brought about by the construction of a second tunnel would increase annual generation by approximately 56,000 MWh. This translates to a revenue increase of \$2.7 million per year based on energy market value projections. In addition, a Renewable Energy benefit related to compliance with Washington State Initiative 937 (I-937) represents an avoided cost of approximately \$1.4 million per year. Consequently, the total estimated monetary value of the project is \$4.1 million per year.

From the standpoint of environmental benefits, the energy captured through this efficiency improvement would translate to a reduction in carbon dioxide emissions of nearly 45,000 metric tons annually, which is equivalent to taking 6,000 cars off the road or enough energy for 5,200 homes.

Other Electric Energy Alternatives

There are no other electric energy alternatives for the G2T Project.

Consequences of Denial of Application

Consequences of denial of the Application for Non-Capacity-Related Amendment of License would be loss of the potential energy efficiency improvement. This would result in a foregone financial benefit to the citizens of Seattle of \$4.1 million annually and an avoided 33,500 metric tons per year of carbon dioxide emissions.

Sources and Extent of Financing and Annual Revenues

The G2T Project would be financed through SCL's Capital Improvement Program (CIP). As a City of Seattle (City) department, SCL's CIP falls under the City's CIP. A city-wide 6-year CIP is prepared each year. The city-wide CIP allocates existing funds and anticipated revenues to rehabilitate, restore, improve, and add to the City's capital facilities. Projects in the CIP cover a wide range of capital improvements, including street repairs, park restoration, and work on electrical infrastructure. The CIP document, prepared by the Department of Finance based on submissions from City departments, is approved by the Mayor, and is then submitted to the City Council for adoption along with the City's annual budget. The CIP is updated each year to reflect ongoing changes.

Cost to Develop the Application

Cost to develop the Application for Non-Capacity-Related Amendment of License is approximately \$390,000 in consultant fees and \$200,000 in SCL labor.

On-Peak and Off-Peak Values of Project Power

Annual on-peak and off-peak market values of Gorge Development power are \$2.03 million and \$0.87 million, respectively.

This page intentionally left blank.

Exhibit E – Applicant-Prepared Environmental Assessment

Exhibit E is provided as a separate file.

This page intentionally left blank.

Exhibit F – Design Drawings

SCL considers the Exhibit F drawings to be Critical Energy Infrastructure Information (CEII). These drawings are being filed separately with the FERC as Volume II to the Application for Non-Capacity-Related Amendment of License.

This page intentionally left blank.

Exhibit G – Project Boundary Maps

Exhibit G is provided as a separate file.

This page intentionally left blank.

Appendices

- 1 Water Management Plan
- 2 Water Quality Report
- 3 Geotechnical Report
- 4 Tunnel Diameter Optimization, Layout, and Water Transient Study Report
- 5 License Amendment Revisions (Shown as Tracked Changes) for License Article 404 and Section 6.0 of Fisheries Settlement Agreement as incorporated by License (1995) including a Revised Table C-3
- 6 Consultation Documentation

This page intentionally left blank.

Appendix 1 – Water Management Plan

Appendix 1 is provided as a separate file.

This page intentionally left blank.

Appendix 2 – Water Quality Report

Appendix 2 is provided as a separate file.

This page intentionally left blank.

Appendix 3 – Geotechnical Report

Appendix 3 is provided as a separate file.

This page intentionally left blank.

Appendix 4 – Tunnel Diameter Optimization, Layout, and Water Transient Study Report

Appendix 4 is provided as a separate file.

This page intentionally left blank.

**Appendix 5 –
License Amendment Revisions (Shown as Tracked Changes) for License Article
404 and Section 6.0 of Fisheries Settlement Agreement as Incorporated by
License (1995) including a Revised Table C-3**

Appendix 5 is provided as a separate file.

This page intentionally left blank.

Appendix 6 – Consultation Documentation

Appendix 6 is provided as a separate file.

This page intentionally left blank.