

Concise Explanatory Statement
Chapter 80.80.040(11) RCW
Baseload Electric Generation Performance Standard

This statement accompanies form CR-103P filed by the Department of Commerce on March 6, 2013.

Reason for Rule Adoption

In 2007, Washington State established a greenhouse gas (GHG) emission performance standard (EPS) for baseload electricity generation. The legislation, RCW 80.80, requires the Department of Commerce (Commerce) Energy Office to survey and determine the average emissions of GHGs for new, commercially available, and purchased natural gas-fired combined cycle combustion turbines (CCCT), reporting the value to the Legislature by June 30, 2013. Commerce is to adopt by rule the average available GHG emission value, and if it is lower than the current standard of 1100 lb. per megawatt-hour (MWh), it becomes the updated EPS for the state.

Difference between the Proposed and Adopted Rule

During the development of the EPS survey (Survey) used to establish the new EPS value, Commerce held two stakeholder meetings before issuing the proposed rule. We received and responded to comments, incorporating changes based on them into the rulemaking process. A technical subgroup of stakeholders participated in three conference calls to develop and refine the EPS survey methodology.

Commerce issued the first edition of the EPS report on November 5, 2012. We published the related notice of proposed rulemaking (“CR102”) in the Washington State Register (WSR 12-21-138) on November 7, 2012. It specified a proposed EPS value of 980 lb. per MWh. There was a public hearing on November 28 for the proposed rulemaking, allowing comments until December 3. Commerce received a number of stakeholder comments, which resulted in minor modifications to the Survey methodology and the resulting EPS value.

On Jan. 17, 2013, after making minor changes to the Survey methodology and the EPS value, we published a supplemental notice of proposed rulemaking (WSR 13-02-098) which proposed an EPS of 970 lb. per MWh. There was a public hearing on February 6, allowing public comment until February 11. No further modifications were made to the Survey or the EPS value.

Summary of Public Comments Received on this Rulemaking.

Commerce accepted comments:

- March 7, 2012 – November 6, 2012: pre-proposal inquiry period (period A)
- November 7, 2012 – December 3, 2012: comment period following notice of proposed rulemaking (period B)
- January 16, 2013 – February 11, 2013: comment period following supplemental notice of proposed rulemaking (period C).
- November 28, 2012 and February 6, 2013: public hearings held during comment periods B and C.

Attachment 1 is the full comment and response summary. The categories contain comments pertaining to the Survey (“SV” numbered comments), comments pertaining to Commerce’s consideration of reliability and cost under RCW 80.80.040(11) (“RC” numbered comments), and comments pertaining to process and legal issues (“PL” numbered comments).

Attachment 2 contains period B comments that resulted in changes to the Survey. Several stakeholder comments made during this period resulted in modifications to the Survey. Comments received during period C helped adjust the legislative report but resulted in no further changes to the Survey.

Concise Explanatory Statement Attachment 1: Summary of Stakeholder Comments and Commerce Responses.

The comments and responses are organized by topic and commenter. The three topical categories are comments pertaining to the CCCT Survey, comments pertaining to the Reliability and Cost Consideration, and comments pertaining to Process and Legal issues

Commerce reviewed and separated the comments by topic and frequently shortened or paraphrased the text. The comment (second column below) and associated response (fourth column below) have an identifying number (first column below) and number indicating the source of the comment (third column below). The source index is provided at the end of this document. If several comments were on the same topic, then one response was developed and a source number for each commenter was provided as a reference. The comment and response summary is presented below.

#	comment summary	sources	Commerce response
SV: Comments regarding the CCCT survey (RCW 80.80.050)			
SV-01	The CO2 emission factor used in the EPS calculator is incorrect and should be 118.86 and not 116.98 lb./MMBtu.	A19 p.12	This comment prompted a review by Commerce of published emission factors. Commerce finds that the most appropriate factor is that presented by the Washington Department of Ecology in Washington Administrative Code 173-407 for compliance reporting. Commerce has changed the survey emission factor from 117.0 lb./MWh to 117.6 lb./MWh.
SV-02	Brochure heat rate values are too optimistic and do not account for parasitic load and other operating factors and therefore should not be used in the EPS calculator.	A19 p.13, A20 p.3.	The EPS calculator starts with reference to the "new and clean" heat rate values published annually by Gas Turbine World (GTW) and which are provided in a public and transparent manner. Commerce then goes through a series of steps that adjust each reference heat rate to derive an operational heat rate, which can then be converted into an operational emission factor. The adjustment factors are described in detail in the legislative report accompanying the survey, and are as follows: gross to net output, ageing (reflecting a middle age CCCT), addition of duct firing capacity, start/stop, partial load, climate, inlet and condenser cooling reductions. In total these adjustment factors increase the average CCCT heat rate in the calculator by 21.5 percent. The adjustment factors were extensively discussed by the Technical subgroup, and included input from the subgroup and independent research by Commerce and Ecology. Commerce and other stakeholders believe that the calculator is moderately conservative, evidenced by a comparison of reported versus calculated emissions for existing CCCTs: calculated emissions of 971 lb./MWh versus reported emissions of 913 lb./MWh. When New York state established its EPS of 925 lb./MWh it went through a similar process to arrive at an operational emission factor. No action.

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SV-03	Commerce fails to account for backup fuel	A19 p.13	Most of the existing CCCTs do not use oil as a backup fuel. A minority of proposed CCCTs in the region will use oil backup fuel. The Fuel Mix Disclosure report that Commerce produces annually indicates that oil is the fuel for only a de minimis portion of CCCT generation. For example, the 2011 Fuel Mix Disclosure report indicates that the Ferndale plant used petroleum fuels for less than 0.01% of generation, which would increase the EPS by less than 0.1 lb/MWh. No action.
SV-04	The proposed EPS value is lenient and easily achievable under realistic operating conditions by modern plants, and would have minimal reliability or cost impacts.	A17 p.3, A18 p.1	Comment acknowledged.
SV-05	The temperature, aging penalty, and duct firing adjustments to the EPS are overly generous.	A17 p.3 p.4	Commerce staff was convinced by arguments made by stakeholders that the survey (EPS calculator) should not use average adjustment factors, but rather should use values towards the high ends of their distributions. Since compliance is evaluated on an annual basis, this protects utilities and plant operators from intermittent non-compliance due to late years in the plant maintenance cycle, or challenging operating conditions related to weather. No action.
SV-06	The Emission Performance Standard Draft Emission Calculator needs to be rigorous, comprehensive and fair.	A18 p.1	Comment acknowledged.
SV-08	The Trans Alta BHP is a 4x1 configuration. A 4x1 configuration should be included in the survey since one exists in Washington.	A20 p.2 B03 p.3	4x1 configurations are relatively rare, and generally adding gas turbines (GTs) to a power plant (4 GTs in a 4x1 config.) increases the overall plant efficiency slightly, depending on how the plant is run. A General Electric reference document shows the same heat rate for 2x1 and 4x1 configurations built around MS6001B GTs, which are small GTs like the ones used at BHP. No action.
SV-09	The Department has chosen to perform a survey of the literature focusing primarily on data of available turbines from the Gas Turbine World handbook. It is not clear that the handbook and the format of the survey address any and all turbines "purchased in the United States" as required by the law.	A20 p.3	RCW 80.80.050 requires Commerce to develop "a survey of new combined-cycle natural gas thermal electric generation turbines commercially available and offered for sale by manufacturers and purchased in the United States." The models listed in Gas Turbine World reasonably cover the gamut of those commercially available; Commerce conducted a secondary screen of purchasing data to ensure that only those models actually purchased in the United States in the last five years were included in the survey. A more complete description of the rationale and methodology is offered in the legislative report describing the survey. No action.
SV-11	While the legal requirement for a survey is clear, the law does not specify what type of survey was anticipated by the legislature. An actual questionnaire answered by turbine manufacturers might result in completely different GHG emission results.	A20 p.3	Commerce, in collaboration with stakeholders, chose the survey methodology it believed fit the purpose of the law most closely. A questionnaire would not provide performance data calibrated among the respondents; would omit performance data relevant to non-respondents; and would not be representative of turbines "commercially available and offered for sale by manufacturers and purchased in the United States" per the requirement of the law. No action.

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SV-12	Trans Alta's BHP is capable of achieving a GHG emission rate moderately above the 1051 lb/MWh that is calculated utilizing the assumptions from the EPS development (i.e. less than the current 1100 lb/MWh current standard) if operating under the baseload conditions used in the survey. Any reduction of the standard below 1, 100 lb/MWh will likely eliminate the ability of TransAlta to enter into any new long-term financial commitment for the BHP and will strand the BHP and eliminate the ability to function as a "baseload" operation.	C02 p.2	While BHP is likely capable of achieving an emission rate under 1,100 lb/MWh under baseload conditions, it is the actual operating emission rate that will determine compliance with the EPS. Its 2010 emission rate of 1,151 lb/MWh exceeds the current EPS, and therefore BHP is not in compliance. One option for BHP, since it has historically run at a very low capacity factor, would be to seek new air permits to operate as a peaking and not a baseload plant.
SV-13	The Gross Clean Heat Rate for the low NOx LM6000PF is reported in the Gas Turbine World (GTW) 2012 Handbook at 6408 Btu/kWh is higher than the standard LM6000PF value of 6365 Btu/kWh that is used in the calculator. If a new unit would be installed in Washington State, the unit would be the low NOx model in order to meet the low emissions required under any new source air permit.	B03 p.4	Commerce will use the low NOx version in the EPS Survey.
SV-14	General Electric currently offers the LM6000PC based CCCT (the same type of turbine used at the Big Hanaford facility) and it should be included in the Survey along with the LM6000PF CCCT.	B03 p.4	Commerce included a representative sampling of new CCCTs in its Survey. The sampling was guided by a review of recently purchased CCCTs (using GTW reports). This review indicated that aero derivative turbine based CCCTs represented only 3 percent of recent CCCT purchases. The current make up of the Survey already over-represents this class of CCCT and consequently Commerce will not add another aero derivative CCCT to the Survey.
SV-15a	Commerce included CCCT models where no actual operational data is available, based on their interpretation of "new." For example, Commerce included the Siemens SGT6-8000H 2S3 turbine. This model is "commercially available" and has been sold in the United States but currently there are no units in commercial operation in the United States, and therefore no operational data. For this reason Commerce should exclude this CCCT from the Survey. [This comment was numbered SV-15 in the 1/15/2013 issue of EPS Comments and Responses.]	B05 p.5, C01 p.2, C03 p.3, C01 p.2	The criteria that Commerce applied for inclusion in the Survey is that a CCCT had to be listed in the GTW Handbook, had to have been listed in GTW as ordered by a utility for baseload or mid merit operation during 2004-10, and had to be either installed or in the process of being installed (CCCT on site) in the U.S. by July 31 of 2012. As noted in the comment the SGT6-8000H 2S is available, and has been purchased is being installed at two sites in the U.S. This particular model (a 60 hertz version) has been extensively tested by Siemens and 50 hertz versions have been in operation in other countries, so operational information is available. Commerce intends to leave one version of the Siemens H class based CCCT in the EPS Survey.
SV-15b	The EPS Survey should include all new designs that are commercially available and that have been sold in the United States, which would include the Mitsubishi J class CCCT and the GE 7FA 0.5 based CCCT. [This comment was numbered SV-18 in the 1/15/2013 issue of EPS Comments and Responses.]	B06	See CCCT inclusion criteria in SV-15a. Neither CCCT had been shipped to a site for installation in the U.S during the development of the Survey.
SV-15c	The EPS Survey includes the Mitsubishi M501G class CCCT, but not the newer derivative Mitsubishi M501GAC CCCT. [This comment was numbered SV-17 in the 1/15/2013 issue of EPS Comments and Responses.]	B06, C04 p.4	See CCCT inclusion criteria in SV-15a. Recent reports indicate that both the M501G and GAC based CCCTs have been ordered but that the GAC version had not been installed or even shipped by July 31 2012. Commerce will include just the G variant in the Survey.

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SV-15d	The Alstom KN24-4 model listed in the EPS Survey has a North American installation, but has not been installed in the U.S. [This comment was numbered SV-16 in the 1/15/2013 issue of EPS Comments and Responses.]	B06 p.5	See CCCT inclusion criteria in SV-15a. Commerce will remove this CCCT from the Survey.
SV-16a	Small CCCTs units are rare, not representative of new base load CCCT generation, and will not likely be constructed in Washington. The over representation of small less efficient CCCTs skews the Survey overall average emission rate to a higher value. Commerce should reduce the number of small CCCTs in the Survey. [This comment was numbered SV-19 in the 1/15/2013 issue of EPS Comments and Responses.]	B06, C04 p.4, C04 p.5	Commerce has re-evaluated the GTW list of Project Orders and Installations and agrees that very few small CCCTs were purchased by utilities for baseload operation during 2004-10, and that they are over represented in the EPS Survey. Accordingly Commerce will remove three smaller CCCTs, including one aero derivative CCCT, from the Survey.
SV-16b	Small CCCTs units should not have been removed from the survey, because the assumption that they will not be built in Washington has no foundation.	C01 p. 2	See response to SV-16a.
SV-20	Rather than focusing on new designs and technology, the Survey developed by Commerce included turbines that were designed as early as 1977. The preponderance of older CCCT designs and the lack of a weighting factor skew the Survey overall average emission rate to a higher value.	B06, C04 p.3	See CCCT inclusion criteria in SV-15a. Commerce considers these updated older designs "new" in the sense that they were newly ordered and/or installed. Commerce does agree that the older CCCTs are over represented in the Survey and will remove two older designs from the Survey.
SV-21	Commerce should weight the CCCTs in the Survey by their generation capacity. This will reduce the contribution of older and smaller CCCTs.	B06 p.5,	The original language of RCW 80.80.050 suggests a simple average of the individual CCCT emission rates in the Survey. There are a number of ways to arrive at an average emission rate, but Commerce believes at this time the simple average is currently the best approach. Removal of several of the older and smaller CCCTs as a result of the two previous comments reduces the contribution from these subsets of CCCTs.
SV-22	The establishment of a single standard based on the average performance of large and small base load CCCTs would preclude the use of smaller CCCTs and at the same time lead to an EPS that is too lenient for larger designs. Commerce should consider a stratified survey and EPS that treats small and large designs separately.	B06	Early in the rulemaking process Commerce did receive a suggestion to establish separate EPS values for small CCCTs and an EPS for larger CCCTs. Several stakeholders objected to this approach and it was not pursued. In addition Commerce interprets the current statute to require a single standard.
SV-23	Commerce incorporated a factor of two percent that is intended to correct the new and clean ratings from the manufacturers from a gross emissions basis to a net emissions basis. However, as set out in the GTW Handbook and vendor sites, manufacturer ratings are ordinarily provided on a plant net generation basis that includes inlet and outlet losses. Accordingly, there is no basis for the system losses adjustment used by Commerce.	B06	Commerce's reading of the GTW Handbook revealed two important pieces of information on whether the output and efficiency values are reported on a net or gross basis. First, it is clearly stated that not all power plant parasitic losses are accounted for in the GTW handbook values. Losses due to emission control equipment, some onsite auxiliary equipment, and transformers are not included. Second, GTW points out that as of late some of the turbine manufacturers, to improve their published output and efficiency values, have altered their heat rate values so they are now actually much closer to gross output values. Considering these two factors and after discussion in the Technical Workgroup, Commerce determined a 2 percent adjustment factor was reasonable.

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SV-24	Commerce should have included positive adjustments for certain factors rather than just adjustments that would have the effect of increasing in-use emissions. For example, a positive temperature adjustment in Washington State may be appropriate because the average mean temperature is less than the ISO design temperature employed by manufacturers. Greater efficiency (and a lower GHG emission rate) is achieved when ambient temperatures are less than ISO design conditions, and so, if there is to be a correction, it should be to lower the emission rate.	B06	Performance adjustments for environmental operating conditions can be positive or negative and are highly dependent on location and when and how a power plant is operated. Generally the positive adjustment factors are smaller than the negative adjustment factors. The Commerce environmental adjustment factor is a composite (negative and positive aspects considered) factor.
SV-25	Heat rate values reported by turbine manufacturers to GTW are inherently conservative resulting in a higher EPS	B06	Commerce has received comments from other stakeholders that GTW heat rates are too optimistic. Commerce will continue to use the heat rates as reported in the GTW Handbook.
SV-26	Commerce did not take into consideration all suggested factors, such as the impact of air cooling.	C01 p. 2	The adjustment factors were extensively discussed by the Technical subgroup, and included input from the subgroup and independent research by Commerce and Ecology. Loss of efficiency due to air cooling was included in the adjustment applied to the new and clean heat rate.
SV-28	The survey was substantiated by only one year of data.	C01 p. 2	This comment is referring to Table 2 in the Commerce publication "Survey of Combined Cycle Combustion Turbine Greenhouse Gas Emission Rates" which compares reported and calculated emission rates. A check of the CO2 emission rates (lb./MWh) for WA and OR CCCTS (EIA or EPA Acid Rain Database) demonstrates a relatively small year-to-year variance in emission rates. To substantiate the comparisons of calculated and reported emission rates Commerce will update Table 2 to include three years of data.
SV-29	The Department reports the BHP emissions as 1,389 lb/MWh for 2010, when the actual emissions from this facility were 1,151 lb/MWh in 2010. It appears that the higher value is the simple cycle emission rate and does not account for electricity produced by the steam turbine.	C02 p.2	Commerce appreciates this information and will update Table 2 in the "Survey of Combined Cycle Combustion Turbine Greenhouse Gas Emission Rates".
SV-30	The pool of machines considered should accurately represent the units that utilities are actually developing. PSE finds the following representation: GE 64.2%, Siemens 23.8%, and Mitsubishi 5.5%. In Commerce's Survey of CCCTs GE machines were vastly underrepresented (by 26%) whereas Mitsubishi machines were vastly over represented (by 18%). The over and under representation has a significant effect on the calculated emission rate.	C03 p.3	Commerce reviewed the recent the GTW compilation of orders of CCCTs by utilities for baseload and mid-merit operation in the U.S. and found a different manufacture representation: GE 46.3%, Siemens 40.3% and Mitsubishi 11.9%. There could be several reasons for the differences between the PSE and Commerce CCCT market evaluations including; a focus on the existing CCCT fleet (versus ordered CCCTs), a focus on just gas turbines purchased (versus CCCTs), inclusion of nonutility purchases, inclusion of peaking CCCT units. It should also be noted that each manufacturer produces several classes of CCCTs with each offering a roughly equivalent performing CCCT unit. For instance all three manufacturers produce an F class CCCT that have emission rates within a few tenths of a percent of each other. The manufacturers newer CCCTs diverge from the

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SV-31	The "clean and new" emissions performance of the existing Washington units (excluding 2 outliers) is 810 lb/MWh, very close to the 798 lb/MWh average for the designs in the Revised Survey. The measured 2010 emission rate for those units is 866 lb/MWh. This suggests that the appropriate correction is 866/810 (1.069) or 6.9 percent.	C04 p. 2	older naming protocol, but the very newest machines (some not quite commercially available) have emission rates within a percent of each other. As noted in previous comments the EPS Survey does not represent a laundry list of all available CCCT configurations nor an exact census of recently purchased CCCTs. This comment is referring to Table 2 in the Commerce publication "Survey of Combined Cycle Combustion Turbine Greenhouse Gas Emission Rates" which compares reported and calculated emission rates. This table has been updated, but if we examine hypothetical adjustment factors determined in this manner, it currently exhibits an 10.6 percent adjustment between "clean and new" and reported values for 2010 and 11.7 percent for 2011. For just the CCCTs in Washington the adjustment is 14.1% in 2010 and 15.9 percent in 2011 -significantly more than the value cited in the comment. Commerce does not believe this is an appropriate way to establish the adjustment factor: going from a "clean and new" to an operational emission rate. The CCCTs in Table 2 could be midway between major maintenance service and could experience further degradation over the next several years. In addition a number of the CCCTs do not have duct firing which tends to decrease the apparent adjustment factor between clean an new and reported emissions. No change to the adjustment factor.
SV-32	Commerce did not address our comments regarding the adjustment factor applied for duct burning. In particular, Commerce misapplied the results of surveys of duct burner usage.	C04 p. 2	The amount and hours of duct firing to be included in the Survey was discussed extensively in the Technical Subgroup. Several participants noted that their facilities or planned facilities had significantly higher duct firing capacities and hours of use than were adopted in the Survey.
SV-33	It is now 2013 and there is no justification to exclude sales in the last two years of a 5 year review, particularly where new data from the 2012 GTW Handbook has been available for months and was referenced in comments during this rulemaking process. In some instances, the agency justifies excluding information concerning new units on the basis that the information was received after the initial proposal. ⁶ Commerce may not establish an arbitrary cutoff date that excludes new units that otherwise fit within the definition of RCW 80.80.050. Rather, Commerce is required to incorporate all data and information in its determination that is received prior to the closure of the comment period. Otherwise, commenting on the proposal would be a meaningless exercise.	C04 p. 3	The singular purpose of this rulemaking is to determine a new emissions performance standard through setting and following a well-defined survey methodology. The commenter is requesting that the length of the rulemaking be a parameter of the survey methodology. Commerce finds this technically unreasonable, and further finds that this would make the proposed EPS a moving target that would add confusion and yet more length to this public process. Commerce will stick to a single, well-defined survey period that relates to the date of adoption intended in RCW 80.80.050, regardless of the length of the rulemaking process. No action.
SV-34	Small (<300MW) designs are not representative of existing baseload CCCT purchases, and there is no reason to believe that these units are representative of the new designs that will be sold as baseload units in the coming years. The Revised	C04 p. 4	Early in the rulemaking several stakeholders noted that smaller CCCTs were being considered, primarily because of their lower initial cost and ability to respond to variations in wind power generation. Future small CCCTs would likely be permitted as baseload

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	Survey includes the emission rates from small (<300MW) designs at 46 percent of the total survey– far higher than any likely sales of such units for baseload applications.		plants, but would provide wind integration and mid merit service.
SV-35	The Low NOx version suggested by Transalta has not, to our knowledge, been sold in the United States. Further, Commerce's adjustment factors include a system loss adjustment to account for, inter alia, inlet and exhaust pressure drops and emission control system losses. Therefore the adjustment factor should already account for any compliance headroom that would be affected by installing NOx controls. Accordingly, the proposed substitution double counts the impact of NOx controls on the emission rate of this unit. Commerce should remove the unit from the Revised Survey, or, at a minimum, use the "standard" version of the unit	C04 p. 5	Commerce does not consider the LM 6000PF low NOx derived CCCT a new model. It is a very modest derivative of the existing LM6000 platform. Our understanding is that the low NOx performance is achieved by an alteration to the gas turbine combustor that slightly reduces output and efficiency of the gas turbine and the down stream steam turbine. Consequently, the NOx control is not a separate device that causes an increased pressure drop across the CCCT as noted in the comment, but is part of the gas turbine design.

RC: Comments regarding the consideration of reliability & cost (RCW 80.80.040(11))

RC-01	Commerce's consideration of cost & reliability should include more extensive analysis.	A11 p.3, A12 p.2, A15 p.2, A19 p.2, A19 p.12, B02 p.2, B02 p.3, B02 p. 4, B02 p. 5, B02 p. 7, CO3 p.3	RCW 80.80.040(11) states that "in adopting and implementing the greenhouse gas emissions performance standard, the department of commerce...shall consider the effects of the greenhouse gas emissions performance standard on system reliability and overall costs to electricity customers." Commerce deems a "consideration" of reliability and cost impacts of the EPS specified in RCW 80.80.040(11) as a more modest level of analysis, which does not require complex dispatch, cost and econometric modeling. The consideration of reliability and cost will make an earnest evaluation of reliability and cost impacts but with simple, top-down methodologies. Commerce is receiving peer review (as required by law) from WECC, BPA, UTC, EFSEC and the Northwest Power and Conservation Council and other entities with <u>experience in electric system analysis.</u>
RC-02	The contribution CCCTs make towards system reliability is not necessarily proportional to the contribution CCCTs make to delivered energy. CCCTs' role as backup to both renewable generation and hydropower, as well as its role as a seasonal resource, is undervalued in the consideration.	A11 p.6, A12 p.3, A19	Taken collectively, the region's CCCTs provide 9% of Washington's electricity (averaged over the last 10 years) and do provide the valuable services that the commenters describe. However, it is Commerce's responsibility to consider the marginal effect of a change in EPS, not to consider the value of the state's entire CCCT fleet. We found the change in EPS, as of August 2012, to affect the regulatory environment for at most 0.6% of the state's electric generation. No action.
RC-03	Cogeneration units are not exempt from the emission performance standard statute.	A19 p.2	The footnote in the Reliability and Cost Consideration has been clarified.
RC-04	Commerce inaccurately dismissed simple cycle plants as not subject to the rule.	A19	The EPS pertains to baseload generation. While there may still be some older simple cycle plants permitted as baseload plants, they are not operated as baseload, and have the option of re-permitting as peaking plants. Due to their lower efficiency and high operating costs, it is likely that new simple cycle plants will be permitted as peaking and

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			not baseload. In addition, there will be no issue with compliance if those simple cycle plants are utility owned and service that utility's load. If an individual utility has a unique situation in which a simple cycle plant needs to serve baseload power under duress, then the utility may apply for an exemption under one of the clauses available in RCW 80.80.060 and 80.80.070. No action.
RC-05	Lowering the EPS will discourage or prohibit financing of future plant improvements or construction.	A12, A19	Simply lowering the EPS from 1100 to 980 lb./MWh does not change the legal context of financing decisions. The EPS law has been in place for five years, during which Commerce has found no evidence of the law impacting generator financing decisions. Financiers may find the EPS law of little concern for the following reasons: a. Utilities and IPPs are selecting the cleaner and more efficient CCCTs due to the federal BACT requirement. b. Utilities and IPPs are selecting the cleaner and more efficient CCCTs because they are less expensive on a per kilowatt capacity basis. (See Reliability & Cost Consideration supporting information S2.) c. Future EPS updates will only be incrementally lower since CCCT efficiency gains, the primary factor that will drive a lower future EPS, are anticipated to be small over the next 5 years. (See Reliability & Cost Consideration supporting information S6.) The Reliability & Cost Consideration has been amended to include this additional information.
RC-06	Any upgrade to a CCCT will trigger the EPS regardless of whether the contracting status changes.	A19	Per the definition of upgrade in the law, only upgrades that result in an increase in fuel usage (heat input) would trigger the EPS. Upgrades for unit reliability or to produce more electricity without additional fuel usage would not trigger the EPS. No action.
RC-07	WUTC will not consider prudent short term contracts resulting from changes to the EPS.	A11 p.7, A19 p.4	Most of the existing baseload CCCT generation is compliant with the proposed update and owned (not contracted) by utilities. Only a very small amount of supply may fall under new, short-term contracts as a result. For this small amount, WUTC will consider prudence in a reasonable legal context including the adjusted EPS. While there may be a small change to consumer cost as a result, Commerce does not find it sufficient to surmount the legal obligation to adjust the EPS. No action.
RC-08	Financiers will not provide lending because a foreclosure would transfer ownership to the lender and trigger the EPS.	A19 p.5	Since a lender would be financing either the purchase of an existing CCCT or the construction of a new CCCT, the EPS would already have been triggered by the borrower's action. Hence, the lender will already have considered whether the facility is safely below the EPS (per Commerce's response to comment RC-05) for the purpose of making the loan. No action.
RC-10	Turbine supply restrictions (due to high global demand or long lead times) will make the requirement to purchase turbines in the top half of the market a financial and/or	A19 p.5	The turbine market includes a wide selection of turbine models, and manufacturers cooperate with buyers to meet their needs on a purchase-by-purchase basis. The survey

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	operational hardship.		identified 19 basic models; restriction to half of these (and probably more than half once manufacturers' ability to customize is taken into account) is unlikely to be prohibitive. Furthermore, U.S. EPA BACT requirements will push buyers of new machines toward more efficient models anyway. No action.
RC-11	Commerce assumes CCCTs operate at optimal conditions and does not examine the positive impacts on grid reliability that is a result of their frequent startups and ramping as is necessary to integrate intermittent resources. Operating in this fashion moves CCCTs towards noncompliance.	A19, A12, B02 p.6	The EPS calculator does incorporate the effects of frequent startup/shutdown and ramping on overall emission rates, one of the operational adjustment factors that the technical subgroup was involved with setting. No action.
RC-12	Commerce wrongly assumes that violations of the EPS are not subject to financial penalties. Citing 173-407-240 (1) WAC and by reference RCW 70.94.	A19	Commerce agrees. The Reliability & Cost Consideration has been amended to reflect this.
RC-13	Commerce's assessment incorrectly assumes that independent power producers (IPPs) are not impacted by RCW 80.80.	A18 p.2, A19 p.6	Commerce agrees. RCW 80.80.040(3)(b) may restrict the operation of IPP baseload generators commencing operation in Washington State after June 30, 2008. Commerce is updating its Reliability & Cost Consideration to reflect this. Operations of the existing IPPs will be unaffected by the proposed change in EPS. Compliance with the EPS would only be triggered by (1) entering into a power purchase agreement that is at least 5 years in length, (2) a change in ownership, or (3) an upgrade that results in an increase in fuel usage.
RC-14	Commerce does not consider a scenario where there is a change in ownership share at an investor owned CCCT.	A19 p.7	Commerce has added this scenario to the Reliability & Cost Consideration.
RC-16	The costs reported in Figure 1 [Supporting Information S2 in the Consideration published November 7] are not representative of installed costs for real turbine installations.	A19 p.8	The values plotted are the nominal costs of the machines themselves. Site or region specific costs (such as land, water treatment, etc.) are relatively independent of the CCCT chosen and hence should be excluded from the analysis. Operating costs typically go down with decreasing GHG emissions rate because a lower GHG emissions rate is caused by lower fuel consumption, so excluding them errs on the side of financial safety. No action.
RC-18	The R-squared value in Figure 1 [Supporting Information S2 in the final Consideration published November 7] is low and suggests a weak or meaningless correlation.	A19 p.11	The purpose of the figure is to demonstrate that a lowered EPS will have little effect toward raising consumer costs. That is, it should demonstrate that there is NOT an Anti-correlation between GHG emissions rate and price. A positive correlation of any strength, even weak, offers that assurance. Nevertheless, Commerce has improved the quality of the data graphed by omitting four turbine models that are no longer frequently purchased, which raised the positive correlation even further, to $R^2=0.874$.
RC-19	Commerce should not rely on the UTC and utility board exemption clauses to avoid a comprehensive reliability & cost analysis.	A19 p.11 B02 p. 4	The Reliability & Cost Consideration makes an earnest evaluation of reliability and cost impacts with simple, top-down methodologies, consistent with the law (see response to comment RC-01). Commerce does not have the capacity nor the underlying, proprietary data to conduct an analysis that treats impacts to individual

#	comment summary	sources	Commerce response
			utilities. The exemption clauses are important and meaningful safety valves for extraordinary circumstances that could impact a single utility. No action.
RC-25	The Reliability and Cost Consideration fails to consider whether a lower EPS would effectively strand much or all of the existing fleet of CCCTs and cause the construction of new compliant CCCTs that otherwise would not be needed.	A11 p.5, A11 p.8, A15 p.2 B04 p.3 B02 p.1, C03 p.3	The Reliability & Cost Consideration now considers the impact of the EPS adjustment on the entire regional fleet (supporting information S4b). The great majority of the existing fleet emits below the proposed standard, and also below a hypothetical standard forecast for 2017.
RC-26	Commerce seems to assume that utilities could and even should ignore statutory requirements (law does not impose direct financial penalties, prevent short-term contracts,....)	A11 p.9	This is not Commerce's intention. Language has been adjusted to remove any implication that utilities should violate statutory requirements. Commerce does not view a choice to sell power on short-term contracts as violating statutory requirements, since this is clearly allowed in the law.
RC-27	The EPS impacts other portions of the utility portfolio - besides CCCTs, presumably other baseload generation such as coal.	A12 p.2	The commenter is correct that other types of generation, especially coal, are impacted by the EPS. However, Commerce's responsibility is to consider the marginal impact of lowering the EPS from the current value to the proposed value. All coal-fired generation available to Washington is already above the current value, so there is no marginal impact due to lowering the value. Hydropower, nuclear, renewables, and non-baseload (peaking) gas-fired generation are entirely unaffected by the EPS. No action.
RC-28	The reliability and cost consideration should consider the impact of the EPS change on utilities' integrated resource plans.	A12 p.2 B02 p.7	Commerce agrees. The Reliability & Cost Consideration now includes (1) an estimate of the next EPS revision in 2017 and (2) a chart of typical turbine capital cost versus GHG emission rate. The estimate of the 2017 EPS revision, which will cover compliance years 2017-2022, demonstrates that the majority of CCCTs in the Northwest's fleet and on the market will be compliant for at least the next decade. The chart of capital costs demonstrates that lower emission rates do not correlate to higher capital costs so the lowered EPS is unlikely to have any profound impacts on integrated resource plans.
RC-30	It is not reasonable for utilities to rely on short-term contracts.	A12 p.3 B02 p.7	The lowered EPS does not force a utility to enter into short-term contracts. Commerce is simply observing that facilities exceeding the EPS may still engage in the spot market or on contracts up to 4.9 years in length. All utilities may continue planning with long time horizons in mind and purchasing on long term contracts as long as those contracts are with compliant facilities. No action.
RC-32	Commerce's consideration of long vs. short-term contracts is insufficient.	A12, A15, A19 p.7	Commerce has partnered with UTC to gather actual data for investor-owned utilities' CCCT contracts and their lengths. The share of CCCT generation under long-term contract is summarized in supporting information S5 of the Reliability & Cost Consideration released on November 7.
RC-33	Agreement with Commerce's findings that an updated standard in the range of 925-975 lb./MWh will not materially affect cost or reliability	A14 p.2, A16 p.3, A18 p.1, B01 p.1	Comment acknowledged.
RC-35	The reliability & cost consideration incorrectly	A12 p.4-	Commerce agrees. The language has been

#	comment summary	sources	Commerce response
	implies that there is no cost for utilities to comply with the EPS.	5, A18 p.2	amended.
RC-38	Existing long-term contracts will be threatened if the generator is upgraded to increase fuel consumption, or if the generator's ownership changes.	A19 p.4	A Washington utility holding a long-term contract with a generator affected in this way remains in compliance until the contract expires. If the change in generator ownership causes expiration of the contract, that is a consequence unrelated to the EPS. No action.
RC-39	RCW 80.80.040(11) specifically requires consultation with the UTC and others during the Reliability and Cost Consideration. Commerce needed greater engagement with the Utilities and Transportation Commission ("UTC").	B05 p.3	Commerce consulted with the UTC repeatedly during the Survey development, the Reliability and Cost Consideration, and at other points during the rulemaking. No action.
RC-40	Adjusting the EPS will have complicated effects on the energy sector, Washington electric consumers, and potentially Western electricity markets. Commerce did not adequately or fully address the numerous ways in which a lowered EPS rate will impact system reliability, load service and utility resource planning requirements and processes. Moreover, the assessment did not adequately foresee the impact a more stringent EPS will have on electricity consumer costs. A better approach to building a reliability and cost analysis would be to account for a range of potential outcomes. For these reasons, Our Companies disagree with the results of Commerce's cost and reliability analysis.	B05 p.5 B04 p.2 B02 p. 5	In its Reliability and Cost Consideration Commerce demonstrated that 1. most regional CCCTs operate well below the proposed EPS value, 2. new CCCTs have even lower emissions and 3. those plants that emit above the proposed EPS are owned by large utilities, and can serve utility load or sell into the short-term market without penalty. Commerce therefore concluded that the impacts on system reliability and costs to customers are minor. Furthermore, at the second stakeholder meeting Commerce requested, but did not receive, detailed and documented information from utilities supporting their claims that the EPS would negatively impact system reliability and costs to customers.
RC-41	Commerce should not attempt to predict the circumstances in 2017/2018 for the next update of the EPS and should remove these references from the Reliability and Cost consideration.	B01 p.1	Commerce agrees. If Commerce chooses to issue a revision of the Reliability and Cost Consideration then the 2017 analysis will be removed.
RC-42	The RCA states that CCCTs currently serve 9.4% of Washington's electric load and concludes that the remaining approximately 90% of the resource mix will ensure system costs and reliability regardless of the EPS's effects. This is not explained or supported.	B02 p.6	The Reliability and Cost Consideration does take for granted that the portion of the resource mix unaffected by the change in EPS, will be available to provide electricity services to the same extent it was before. We find this assumption to be self evident. No action.
RC-43	Commerce's draft document states that the price penalty for a 4.9 year contract vs. a 10 year contract will be minimal or non-existent; this is contrary to experience - the shorter the contract, the shorter the period to spread costs over.	B02 p.9	The commenter is apparently referencing an early draft of the Reliability & Cost Consideration; this statement was removed in August of 2012. No action.
PL: Comments regarding the legal context & rulemaking process			
PL-01	Stakeholders received insufficient notice of pre-proposal inquiry activities.	A08, A10 p.1	The Pre-proposal Statement of Inquiry was published in the Washington State Register on March 7, 2012. In response to stakeholder concerns about adequate notification, Commerce delayed the process in order to offer all stakeholders adequate opportunity for input.
PL-02	The requirements under RCW 80.80.050 to report a survey of turbines to the legislature, and to adopt by rule the average available greenhouse gas emissions output, should be	A10 p.1-2, A11 p.3 B05, p.1	Commerce finds the plain language of RCW 80.80.050 to indicate that the average available greenhouse gas emissions output is that average determined from the survey.

#	comment summary	sources	Commerce response
	interpreted as separate requirements.		Furthermore, definition 80.80.010(3) states, "Average available greenhouse gas emissions output' means the level of greenhouse gas emissions as surveyed and determined by the energy policy division of the department of commerce under RCW 80.80.050." No action.
PL-08	Lowering the EPS will force in-state IPPs out of business, reducing grid reliability and increasing cost to consumers.	A08 p.2	In-state IPPs will not be forced out of business, but they will be more restricted in the types of new generating equipment they may purchase. They may continue to operate any equipment in their ownership as of June 30, 2008, but if any of that equipment has an emission rate above the EPS their future contracts with Washington utilities will be under 5 years in length. These appear to be intended consequences of the law. No action.
PL-10	Commerce should consider the environmental impacts of lowering the EPS.	A11 p.4, A16 p.2, B02 p.3, C01 p. 3	RCW 80.80 is itself, in intent, an environmental law. It is not Commerce's responsibility to further evaluate the law's environmental consequences. No action.
PL-11	Commerce should not adjust the EPS before the Legislature can consider the report on need, applicability and effectiveness required under RCW 80.80.080.	A11 p.2, B02 p.2, B03 p.5, B04 p.1	The law set up the Legislative report by the Department of Ecology, and the adjustment of the EPS standard, with the same time schedule and due dates to the legislature. Ecology will submit this report to the Legislature when or before the Notice of Proposed Rulemaking is published.
PL-12	Updating the standard is required by law and not voluntary	A14 p.1, A17 p.1	Comment acknowledged.
PL-13	No reason for further delay; process needs to be expedited.	A14 p.3, A17 p.6, A18 p.1	Commerce is moving forward at the maximum rate possible based on available staffing and the complexity of answering all stakeholders' concerns.
PL-15	There is clear need and value in maintaining and updating the Washington EPS over and above current federal requirements.	A17 p.2, A18 p.2	Commerce agrees. See response to Comment PL-22.
PL-16	The claim that the revised EPS should not be drawn from the survey of new and commercially available CCTs is fallacious.	A18 p.2	Commerce agrees. See response to Comment PL-02.
PL-18	Commerce's voluntary decision to review reliability and cost is welcome.	A14 p.2	Comment acknowledged.
PL-19	The guidance in the law for Commerce to "consider" reliability and cost does not require an extensive technical and econometric evaluation.	A16 p.2	Commerce agrees. The consideration of reliability and cost will make an earnest evaluation of reliability and cost impacts but with simple, top-down methodologies. Commerce is receiving peer review (as required by law) from WECC, BPA and other entities with experience in electric system analysis.
PL-21	"Baseload electric generation" as defined in process documents or as defined in WAC is not consistent with the definition in RCW 80.80.	A20 p.3	In 2013 Ecology will be making changes to WAC 173-407 to incorporate the updated EPS and to reflect changes to RCW 80.80 that have been enacted since 2008. This issue will be addressed within that rulemaking.
PL-22	The EPA Tailoring Rule makes the EPS irrelevant.	A11 p.2, B02 p. 2, C01 p. 3, C03 p.2	The U.S. EPA Tailoring Rule applies only to facilities exceeding certain size thresholds; does not apply to power contracted by utilities; and applies a best available control technology ("BACT") methodology on a case-by-case basis rather than a uniform quantitative standard. Commerce finds the EPA Tailoring Rule to be materially different

#	comment summary	sources	Commerce response
			from the EPS. No action.
PL-23	The proposed federal emissions performance standard makes the EPS irrelevant.	B04 p.3, B05 p.2, C01 p. 3	The proposed federal standard is not yet law. If it does become law it will affect only new plants, while Washington's EPS affects existing plants and contracts as well, making it materially different from the federal standard. No action.
PL-24	Rather than interpreting what "baseload electric generation" means as "allowed for by current permits", the WAC definition should be corrected as part of this process. For existing power generation facilities the definition should allow evaluation of the actual operating history of a plant as the method of determining the owner or operator's intent, since the GHG law has been in place for 5 years now and years of operating data under the law is available for existing units.	B03 p.4	In 2013 Ecology will be making changes to WAC 173-407 to incorporate the updated EPS and to reflect changes to RCW 80.80 that have been enacted since 2008. This issue will be addressed within that rulemaking.
PL-28	The definitions and methodology guiding the survey were poorly defined by Commerce.	C03 p.3	Commerce will consult with all stakeholders a minimum of two years before the 2017 adjustment to the standard, in order to allow more detailed interpretations of the survey terms, and the most robust possible methodology.

Comment Source Index

#	date	organization
A: comments received prior to the Notice of Proposed Rulemaking		
A01	04/02/12	PacifiCorp
A02	04/04/12	Avista
A03	04/05/12	PSE
A04	04/10/12	Northwest Energy Coalition, Climate Solutions & Washington Environmental Council
A05	04/11/12	stakeholders meeting
A06	04/16/12	Association of Washington Business
A07	04/17/12	Industrial Customers of Northwest Utilities
A08	07/24/12	Tenaska
A09	07/27/12	PSE
A10	08/02/12	Tenaska
A11	08/02/12	PSE
A12	08/03/12	Avista & Pacificorp
A13	08/03/12	Washington Public Utility Districts Association
A14	08/22/12	Climate Solutions
A15	08/27/12	PSE
A16	08/27/12	Washington Environmental Council
A17	08/28/12	Natural Resources Defense Council
A18	08/28/12	Northwest Energy Coalition
A19	08/28/12	Tenaska
A20	06/13/12	TransAlta
B: comments received after Notice of Proposed Rulemaking		
B01	12/03/12	Washington Environmental Council
B02	12/03/12	Puget Sound Energy
B03	12/03/12	TransAlta
B04	12/03/12	Association of Washington Business
B05	12/03/12	PacifiCorp-Avista
B06	12/03/12	Sierra-NRDC
C: comments received after close of CR-102 comment period (December 3, 2012 11:59pm)		
C01	02/11/13	PacifiCorp
C02	02/11/13	TransAlta
C03	02/11/13	PSE
C04	02/11/13	Sierra-NRDC

Concise Explanatory Statement Attachment 2: Explanation of Changes in Revised Survey Edition

Commerce issued the first edition of this legislative report on Monday, November 5 2012. The related notice of proposed rulemaking (“CR102”) was published in the Washington State Register (WSR 12-21-138) on November 7, 2012. Commerce then held a public hearing on November 28 to take comment from stakeholders on the proposed rulemaking and allowed public comment by mail or email until December 3. Commerce received a number of substantive stakeholder comments resulting in the minor modifications to the Survey methodology. The changes to the Survey and the stakeholder comments that initiated the changes are presented in this document.

Because of the change in the Survey methodology Commerce issued a Supplemental Notice of Rulemaking on January 16th which was followed by another public hearing on February 6th where additional stakeholder comments were heard. No further changes were made to the Survey.

Four changes were made to the Survey, as follows.

- 1) Commerce uses the heat rate for the low NO_x version of the General Electric LM6000PF in the revised Survey, to reflect the installation that would realistically occur in Washington State. This changes the clean and new heat rate from 6,385 Btu/kWh to 6,408 Btu/kWh.
- 2) The Alstom KN24-4 model included in the first edition of the EPS Survey has not been installed in the U.S., and has been removed from the revised edition.
- 3) Small and older CCCT designs were over-represented in the first edition of the survey. Commerce has re-evaluated the GTW list of Project Orders and Installations for 2004-10 and agrees that very few small and older design CCCTs were ordered, and that they are over represented in the EPS Survey. Commerce will remove the following five CCCTs from the Survey so it more closely matches recent CCCT orders placed by utilities for baseload generation purposes: General Electric LM2500, 106FA and S107EA derived CCCTs, Mitsubishi 501F derived CCCT, and Siemens 2000E derived CCCT.
- 4) The estimate of the 2017 EPS update value has been removed.

The net effect of the modifications to the Survey methodology was to reduce the EPS from the initial proposed value of 980 lb/MWh to **970** lb/MWh, a change of approximately one percent.

Basis for the changes to the Survey

The stakeholder comments that were taken under consideration and Commerce's responses are presented below. Comments that Commerce took action on are noted in italics.

1. *Comment: The Gross Clean Heat Rate for the low NO_x LM6000PF is reported in the Gas Turbine World (GTW) 2012 Handbook at 6408 Btu/kWh is higher than the standard LM6000PF value of 6365 Btu/kWh that is used in the calculator. If a new unit would be installed in Washington State, the unit would be the low NO_x model in order to meet the low emissions required under any new source air permit.*

Response: Commerce will use the low NO_x version in the EPS Survey.

2. Comment: General Electric currently offers the LM6000PC based CCCT (the same type of turbine used at the Big Hanaford facility) and it should be included in the Survey along with the LM6000PF CCCT.

Response: Commerce included a representative sampling of new CCCTs in its Survey. The sampling was guided by a review of recently purchased CCCTs (using GTW reports). This review indicated that aero derivative turbine based CCCTs represented only 3 percent of recent CCCT purchases. Adding a second aero derivative CCCT to the Survey would vastly over-represent this class of CCCT.

3. *Comment: The Alstom KN24-4 model listed in the EPS Survey has a North American installation, but has not been installed in the U.S.*

Response: Commerce will remove this CCCT from the Survey.

4. Comment: Commerce included CCCT models where no actual operational data is available, based on their interpretation of "new." For example, Commerce included the Siemens SGT6-8000H 2S3 turbine. This model is "commercially available" and has been sold in the United States but currently there are no units in commercial operation in the United States, and therefore no operational data. For this reason Commerce should exclude this CCCT from the Survey.

Response: Commerce applied the criterion, that to be included in the Survey a CCCT had to be listed in the GTW Handbook, and to be listed in GTW's Project Orders and Installations covering the period from January 2004 through December of 2010, ordered by a utility for baseload generation, and be either installed or in the process of being installed in the U.S. by July 31 2012. The SGT6-8000H 2S is listed as available, has been purchased, and is being installed at two sites in the U.S. This particular model (a 60 hertz version) has been extensively tested by Siemens and 50 hertz versions have been in operation in other countries, so some operational information is available. One version of the Siemens H class based CCCT will remain in the EPS Survey.

5. Comment: The EPS Survey includes the Mitsubishi M501G based CCCT, but not the newer derivative Mitsubishi M501GAC CCCT, which is available and has a lower heat rate and emission rate.

Response: When Commerce developed the initial (CCCT) Survey list in February 2012 the GAC version of the G class CCCT was not listed in the 2011 GTW Handbook. Recent reports indicate that both the M501G and GAC based CCCTs are available and have been purchased in the U.S. but that the GAC version had not been installed or shipped by July 31 2012 when Commerce finalized the survey. Commerce will include just the G variant in the Survey

6. *Comment: Small CCCTs units are rare and will not likely be constructed in Washington. These small units are not representative of new base load CCCT generation. The EPS Survey over represents small CCCTs with six CCCTs of less than 171 MW capacity out of a total of nineteen total CCCTs Surveyed. The GTW handbook list of Project Orders and Installations for 2007-10 showed only one base load CCCT of similar capacity, a 188 MW facility, being purchased and installed. The over representation of small less efficient CCCTs skews the Survey overall average emission rate to a higher value. Commerce should reduce the number of small CCCTs in the Survey.*

Response: Commerce has re-evaluated the GTW list of Project Orders and Installations and agrees that very few small CCCTs were purchased, and that they are over represented in the EPS Survey. Accordingly Commerce has removed model numbers General Electric models 106FA and LM2500 G4 RC, Mitsubishi model MPCP1(501F), and the Siemens model SCC6-2000E from the Survey.

7. *Comment: Rather than focusing on new designs and technology, the Survey developed by Commerce included turbines that were designed as early as 1977. Only three of the units in the Survey can be considered representative of new base load CCCTs. The preponderance of older CCCT designs and the lack of a weighting factor skew the Survey overall average emission rate to a higher value.*

Response: Commerce notes that these older CCCTs have generally gone through several updates during the intervening years and that the design dates in the Survey represents the initial announcement of that particular class of CCCT which can precede the initial installation date by several years. Commerce also considers these older CCCT designs "new" in the sense that they do not represent existing CCCTs, and were newly ordered during the GTW reporting period of 2004-10 and were installed or were being installed by July 31 2012 . However, upon review Commerce does agree that the older CCCTs are over represented in the Survey and has removed model numbers General Electric model S107EA. In addition the GE 106FA, the Mitsubishi model MPCP1(501F), the Siemens model SCC6-2000E can be considered both older and smaller models - their removal is noted in comment 6 above.

8. Comment: The EPS Survey should include all new designs that are commercially available and that have been sold in the United States, which would include the Mitsubishi J class CCCT and the GE 7FA 0.5 based CCCT.

Response: The Mitsubishi J class and GE 7FA 0.5 based CCCTs have been announced and interested entities have made down payments on these two CCCT designs. Neither CCCT had been installed in the U.S. or was in the process of being installed during the development as of July 31 2013. Research by Commerce indicates that Mitsubishi and GE just completed testing of these two new CCCT models this year, and that the machines had not shipped and that initial installations may not occur until 2014. For these reasons the Mitsubishi J class and GE 7FA 0.5 based CCCTs were not included in the EPS Survey. However, they will almost certainly be included in the next EPS update.

9. Comment: Commerce should weight the CCCTs in the Survey by their generation capacity. This will reduce the contribution of older and smaller CCCTs.

Response: The language of RCW 80.80.050 does not suggest or specify a weighted average, so Commerce takes the plain meaning to be a simple average of the individual CCCT emission rates.

10. Comment: The establishment of a single standard based on the average performance of large and small base load CCCTs would preclude the use of smaller CCCTs and at the same time lead to an EPS that is too lenient for larger designs. Commerce should consider a stratified survey and EPS that treats small and large designs separately.

Response: Early in the rulemaking process a stratified EPS was discussed, but several stakeholders objected to this approach and it was not pursued.

11. Commerce incorporated a factor of two percent that is intended to correct the new and clean ratings from the manufacturers from a gross emissions basis to a net emissions basis. However, as set out in the GTW Handbook and vendor sites, manufacturer ratings are ordinarily provided on a plant net generation basis that includes inlet and outlet losses. Accordingly, there is no basis for the system losses adjustment used by Commerce.

Response: Commerce's reading of the GTW Handbook revealed two important pieces of information on whether the output and efficiency values are reported on a net or gross basis. First, it is clearly stated in the GTW Handbook that not all power plant parasitic losses are accounted for in the reported heat rate values. Losses due to cooling and emission control equipment, some onsite auxiliary equipment, and transformers are not included. Second, some of the manufacturers, to improve their published output and efficiency values, have been altering their published values so they are now actually much closer to a gross generation heat rate values. Considering these two factors and after discussion in the Technical Workgroup, Commerce has determined a 2 percent adjustment factor was reasonable.

12. Commerce should have included **positive** adjustments for certain factors rather than just adjustments that would have the effect of increasing in-use emissions in the Survey. For example, a positive temperature adjustment in Washington State may be appropriate because the average mean temperature is less than the ISO design temperature employed by manufacturers. Greater efficiency (and a lower GHG emission rate) is achieved when ambient temperatures are less than ISO design conditions, and so, if there is to be a correction, it should be to lower the emission rate.

Response: Performance adjustments for environmental operating conditions can be positive or negative and are highly dependent on the location and time a power plant is operated. Generally the positive adjustment factors are smaller than the negative adjustment factors. The environmental adjustment factor applied in the Survey is a composite that considers both negative and positive aspects.

13. *We do not support the finding that anticipates that the 2018 EPS update will be 965 lb/MWh. Technological change is difficult to predict and publishing an anticipated number may ultimately be unhelpful to all parties.*

Response: Commerce evaluated the series of efficiency improvements to a commonly purchased gas turbine over the course of twenty years in order to estimate the 2018 EPS update value. That said, technical change is difficult to predict and often is not smooth or continuous in nature. Commerce will remove this section from the Legislative Report and from any updates to the Reliability and Cost Consideration.