is best left to the ERCOT stakeholder process, where other potentially affected parties can weigh in and offer their input outside of the compressed time limits of this case. However, the ALJs agree with Staff's central premise that ERCOT and ERCOT ratepayers should not have to pay for, or subsidize, a project from which they derive little or no benefit. Staff's recommendation to open a compliance docket to monitor the progress of ERCOT and the stakeholders on this issue has merit.

The ALJs find that conditioning the Commission's approval of Garland's application on a requirement that ERCOT study this issue and determine what transmission upgrades, if any, are necessary prior to energization of the SCT DC Tie and the Garland Project is reasonable, protects the public interest, and is consistent with the FERC Order. The ALJs recommend that the Commission instruct ERCOT to open a stakeholder process to investigate the issue expeditiously. However, the ERCOT stakeholder process and investigation should not be tied to a date certain, as the public interest requires that this project and case of first impression be reviewed deliberately and in a detailed manner.

4. Economic Dispatch and Congestion Management (Preliminary Order Issue No. 4d)

As noted in the parties' briefing, there is a rough consensus that the issues of economic dispatch and congestion management are highly technical and should be left to ERCOT and the ERCOT stakeholders to investigate and resolve. There appear to be two general schools of thought in the evidence regarding how best to manage congestion attributable to SCT DC Tie imports. The first is the use of security-constrained economic dispatch (SCED), and the second is the use of a Constraint Management Plan (CMP), including the possible use of a special protection scheme (SPS). ERCOT witness Mr. Woodfin provided extensive testimony regarding the two approaches in his direct testimony.

Mr. Woodfin described SCED as a "system that sets the output of participating resources in the manner that is the most economic way to use those resources to serve the system load, based on the resources' offer prices and operating limits, which does not result in the post-

contingency overload of any transmission element.^{*171} In the typical case, SCED lowers the output of one or more generators that potentially contribute to the overload and increases the output of one or more of the next-lowest-cost generators that do not contribute to the overload until the overload is minimized or eliminated. While SCED is typically associated with a generator, it was discussed extensively in this case because SCT DC Tie imports can mimic generation serving load.¹⁷²

The second alternative proposed by Mr. Woodfin is the use of a CMP. In some cases, it is not possible or feasible to re-dispatch generation to alleviate a constraint or overload. In those cases, ERCOT may work with the TSP to implement a plan to shed load, if necessary, until the overload or constraint is resolved. Because it is not often feasible to implement a quick transmission solution to a constraint as it is occurring, a CMP is a pre-planned solution to a possible contingency and requires that actions be taken prior to the occurrence of a possible overload or contingency.¹⁷³

SCT witness Mr. Bruce agreed with Mr. Woodfin that a solution for congestion potentially caused by SCT DC Tie imports is a matter for the ERCOT stakeholders to review and resolve. However, Mr. Bruce testified that it is probably infeasible at this time to subject the ERCOT DC ties to SCED or any other form of automated economic dispatch because treating the SCT DC Tie as a generator will have real-time effects at the other end of the line, affecting another balancing authority. Mr. Bruce suggested a possible solution to ERCOT's current practice is to move the DC tie scheduling window closer to the operating hour or use proxy offer curves in SCED as a potential workaround.¹⁷⁴ Mr. Bruce recommended the Commission instruct ERCOT to initiate a review of current congestion management practices through the appropriate ERCOT committees so that all interested stakeholders, particularly those not involved in this case, can participate.¹⁷⁵

¹⁷¹ ERCOT Ex. 2, Woodfin direct at 5.

¹⁷² Tr. at 244-248.

¹⁷³ ERCOT Ex. 2, Woodfin direct at 6, 9.

¹⁷⁴ SCT Ex. 4, Bruce supp. direct at 13-14.

¹⁷⁵ SCT Ex. 4, Bruce supp. direct at 14.

Luminant witness Dr. Shams Siddiqi took a more prescriptive approach to the issue. Dr. Siddiqi assumed a constraint exists by virtue of SCT DC Tie imports that cannot be accommodated by the ERCOT system, and recommended that the Commission condition its approval of Garland's application on the adoption of a CMP, including the possible use of a SPS,¹⁷⁶ through strong "policy guidance."¹⁷⁷ While Dr. Siddiqi acknowledged that ERCOT would have to review and approve the CMP ultimately agreed upon, strong direction from the Commission would give the "market and line importers" assurances that a CMP exists and will be implemented in a timely fashion to accommodate both existing generation and imports over the DC ties.¹⁷⁸ In its Reply Brief, Luminant was even more emphatic, recommending the Commission order ERCOT to develop and implement an appropriate plan from the outset as a condition of approving Garland's application.¹⁷⁹ In its Reply Brief, TCPA appears to support Dr. Siddiqi and Luminant.¹⁸⁰

TIEC does not oppose the parties' recommendation that ERCOT be directed to study the use of a CMP, including an SPS, as part of the ERCOT stakeholder process. However, Mr. Griffey testified that the need for a CMP is fact-specific, and a CMP is not appropriate in every situation where a DC tie creates congestion.¹⁸¹ Taking it one step further, Mr. Griffey expressly took issue with Dr. Siddiqi's suggestion that the Commission mandate a CMP as a condition for approving Garland's application, and criticized Luminant's position as a plan to protect existing generators from competition for transmission access. Specifically, Mr. Griffey testified "that Dr. Siddiqi's CMP proposal would automatically cut imports to ensure that existing Luminant generation is not forced to curtail."¹⁸² In its Reply Brief, TIEC recommends that the Commission have ERCOT study the issue, but cautions that such direction should "not be misconstrued as endorsing proposals to back down imports over the SCT DC Tie in favor of

¹⁷⁶ Dr. Siddiqi described an SPS as system that can be "designed to first runback and, if necessary, trip supply in this area to relieve transmission system overloads." Luminant Ex. 1, Siddiqi direct at 12.

¹⁷⁷ Luminant Ex. 1, Siddiqi direct at 12-13.

¹⁷⁸ Luminant Ex. 1, Siddiqi direct at 13.

¹⁷⁹ Luminant Reply Brief at 4.

¹⁸⁰ TCPA Reply Brief at 7-8.

¹⁸¹ TIEC Ex. 2, Griffey cross rebuttal at 8.

¹⁸² TIEC Ex. 2, Griffey cross rebuttal at 8.

ERCOT generators without considering economics-i.e., which power is cheaper for customers."¹⁸³

Staff joins the majority of parties in this case in recommending that the Commission require ERCOT to evaluate options for managing congestion issues caused by imports *and* exports over the SCT DC Tie.¹⁸⁴ Staff believes the ERCOT stakeholder process is the best forum to investigate and resolve the issues that cannot otherwise be resolved through existing ERCOT processes and procedures. Speaking to Luminant's prescriptive approach, Staff contends that Dr. Siddiqi's recommendation that the Commission order a CMP as a condition for certification is premature and may prove to be infeasible. Staff requests that the Commission direct ERCOT to study the issue of congestion related to SCT, and "to the extent necessary," implement a cost-effective way to manage congestion caused by the SCT DC Tie before the Garland Project is energized. Finally, unlike other parties, Staff also recommends that the Commission include a condition ordering SCT to pay ERCOT for the costs of studying the issue because, in Staff's view, the SCT DC Tie few benefits to ERCOT ratepayers.¹⁸⁵

Analysis and Recommendation

The preponderance of the evidence on this issue shows that the ERCOT stakeholder process is the best forum to study the technical and complex issue of whether to subject the SCT DC Tie and the Garland Project to some form of economic dispatch, or to implement a CMP or similar approach to deal with congestion caused by imports or exports over the SCT DC Tie. As pointed out by ERCOT in its Reply Brief, "Luminant stands alone" in requesting that the Commission develop a method to specifically identify congestion caused by imports and exports across the SCT DC Tie.¹⁸⁶ Given the above, the ALJs conclude that the proper way for ERCOT to investigate, address, and resolve the issue of congestion caused by SCT cannot be discerned from the evidence presented in this case. Furthermore, there are other

¹⁸³ TIEC Reply Brief at 4.

¹⁸⁴ Staff Reply Brief at 19.

¹⁸⁵ Staff Reply Brief at 20.

¹⁸⁶ ERCOT Reply Brief at 4.

stakeholders who were not parties to this docket who would be interested and/or affected by the results of ERCOT's investigation.

The ALJs find that conditioning the Commission's approval of Garland's application on a requirement that ERCOT: (a) study and determine whether some or all DC ties should be economically dispatched or whether implementation of a CMP or SPS would more reliably and cost-effectively manage congestion caused by DC tie flows, and (b) implement any necessary revisions to its protocols and standards as appropriate, prior to the energization of the SCT DC Tie and the Garland Project, is reasonable, protects the public interest, and is consistent with the FERC Order. Accordingly, the ALJs recommend that the Commission direct ERCOT to initiate a study of the issue through the appropriate ERCOT committee(s), and to do so expeditiously, but without imposing a time limit for ERCOT deliberations. The ALJs also recommend that the Commission require regular updates on ERCOT's progress in studying and resolving the issues raised, either through separate regular updates or updates filed in a compliance docket, should the Commission choose to open one.

Finally, with respect to Staff's recommendation that SCT be ordered to pay for ERCOT's studies on the issue, including the costs of implementing any ERCOT plan to address congestion, the ALJs find no compelling reason to do so. Staff bases its recommendation on its assertion that there are a lack of benefits to ERCOT ratepayers from the SCT DC Tie and the Garland Project. While the record suggests that the benefits claimed by SCT may be overstated, ERCOT's investigation may prove otherwise. Hence, in light of the other matters the ALJs and the parties suggest be referred to ERCOT for study, it is unreasonable to directly assign all costs of ERCOT study and resolution of the instant issue to SCT. In addition, requiring SCT to pay for all ERCOT-related costs could create an incentive for parties opposed to SCT and the Garland Project to create unnecessarily expensive obstacles to ERCOT's final resolution of the matter.

5. Ramp Rate Restrictions (Preliminary Issue No. 4e)

Staff, SCT, and ERCOT all agree that ramp rate restrictions will need to be developed for the SCT DC Tie. As SCT explained, these restrictions are necessary because of the SCT DC Tie's ability to ramp up, ramp down, or change the direction of power flow in a short period of time.¹⁸⁷ ERCOT witness Mr. Woodfin testified that ramp rate limits on the SCT DC Tie will be needed to limit frequency deviations associated with these sudden changes and the inability of other resources on the system to match the rate of change on the SCT DC Tie. Because flows over the SCT DC Tie will not be controlled by ERCOT's market management tools, other generators will have to be dispatched to address the impacts of the tie flows. To maintain proper frequency and balance between generation and load, the generations on the ERCOT system must ramp at the same rate as the SCT DC Tie. Although the existing smaller DC ties on the ERCOT system have not created a problem with this approach, the size of the SCT DC Tie could create operational issues. Generating units cannot change their output instantaneously, and different units will change output at different rates depending on current operating conditions. Without a ramp rate limit, ERCOT would have to procure and deploy ancillary services to compensate for the frequency variability in imports and exports of power resulting from ramping by the SCT DC Tie. ¹⁸⁸

Ten-minute ramps are built in every hour (for the last five minutes and first five minutes of each hour) for flows on the DC ties currently part of ERCOT's system to accommodate hourly flows as scheduled. The DC tie operators adjust the flows over the ties to meet the prescribed schedule. So, if the scheduled import quantity for a particular DC tie increases by 200 MW from one hour to the next, for example, the tie operator will increase the quantity imported over the tie at a rate of 20 MW per minute for a ten-minute period beginning five minutes before the hour and ending five minutes after the hour.¹⁸⁹ As an example of the potential problems that could be faced without a ramp rate limit on the SCT DC Tie, ERCOT witness Mr. Woodfin explained that if the SCT DC Tie ramped from zero in one hour to 2,100 MW export in the next, the other generating units on the ERCOT system would have to increase their output by 2,100 MW in 10 minutes. This would likely exceed the ramping capability of the ERCOT system and require immediate operator action to restore frequency to an acceptable level.¹⁹⁰

¹⁸⁷ SCT Reply Brief at 32.

¹⁸⁸ ERCOT Ex. 2, Woodfin direct at 10-11.

¹⁸⁹ ERCOT Ex. 2, Woodfin direct at 11.

¹⁹⁰ ERCOT Ex. 2, Woodfin direct at 12.

In order to address reliability concerns as to ramping with interconnecting the SCT DC Tie, Mr. Woodfin suggested that DC ties be integrated with market tools, making management of the ties more reliable. Or, Mr. Woodfin testified, an extension of the current tenminute ramping period might also achieve a ramp rate limit for the DC ties. This alternative would require a change to the scheduling process. Mr. Woodfin stated that a more in-depth analysis through the ERCOT stakeholder process would be helpful to determine which of these options, or possibly others, might work best to resolve the ramp rate limit issue.¹⁹¹

SCT witnesses Stan Gray and Mr. Bruce agreed that ramp rate restrictions will be required for the SCT DC Tie.¹⁹² Mr. Gray stated that SCT will work with ERCOT and its stakeholders to address and resolve this issue, the solutions are straightforward and noncontroversial, and SCT "will ramp in accordance with the capabilities of the ERCOT and southeastern systems."¹⁹³ Mr. Bruce specifically agreed with Mr. Woodfin that changes in flows over the SCT DC Tie should not exceed the ramp rate capability of the ERCOT system. He noted that ERCOT's authority to impose ramp rate restrictions and denying DC tie flows that would violate the ramp rate capability of the system, along with the successful history of ERCOT stakeholders in developing and implementing ramp rate restrictions in other scenarios, will allow this issue to be timely addressed through the normal ERCOT stakeholder process.¹⁹⁴

Staff proposes that the Commission condition its approval of Garland's application on a requirement that ERCOT determine whether new ramp rate restrictions are necessary and, if so, adopt the required changes prior to the energization of the Garland Project. SCT appears to oppose this suggested condition, arguing that ERCOT has previously made revisions to its protocols for ramp rate restrictions through the ERCOT stakeholder process when necessary without Commission order.¹⁹⁵ However, SCT then expresses its support for a finding of fact and ordering paragraph proposed by ERCOT, which seem to track Staff's recommendation.

¹⁹¹ ERCOT Ex. 2, Woodfin direct at 12-13.

¹⁹² SCT Ex. 10, Gray rebuttal at 11-12; SCT Ex. 9, Bruce rebuttal at 17.

¹⁹³ SCT Ex. 10, Gray rebuttal at 12.

¹⁹⁴ SCT Ex. 9, Bruce rebuttal at 16.

¹⁹⁵ SCT Ex. 13; Tr. at 261-263.

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Analysis and Recommendation

The preponderance of the evidence shows that ERCOT rules should impose ramp restrictions on imports and exports over the SCT DC Tie. ERCOT rules currently have ramp restrictions for the existing DC ties, but given the size of the SCT DC Tie, revisions to the restrictions will need to be made to ensure reliability on the ERCOT system to account for the interconnection of the SCT DC Tie. No party disputes this, and Staff, ERCOT, and SCT all take the position that the restrictions necessary should be determined through the ERCOT stakeholder process. Therefore, the ALJs find that requiring ERCOT, through its stakeholder process, to determine what ramping restrictions will be necessary to accommodate the interconnection of the SCT DC Tie, and to implement those restrictions prior to the energization of the SCT DC Tie and the Garland Project, is a reasonable condition to the approval of Garland's application that protects the public interest and is consistent with the FERC Order.

6. Outage Coordination (Preliminary Order Issue No. 4f)

ERCOT witness Mr. Woodfin testified as to how coordination of generator and transmission outages in the ERCOT system will become more complicated with the interconnection of the SCT DC Tie. He explained that one of ERCOT's core functions is to coordinate these outages to ensure continuous and reliable operation of the transmission system. This function requires ERCOT to predict future DC tie imports and exports as accurately as possible to determine whether requested outages of generators or transmission elements can be granted while maintaining system reliability. However, actual tie flows cannot be known with reasonable certainty, especially with enough time to allow for outage scheduling. Incorrect predictions can result in necessary curtailments of flows over the ties or withdrawals of outage requests.¹⁹⁶

According to Mr. Woodfin, the size of the SCT DC Tie will make these coordination efforts more difficult, and ERCOT's margin of error in predicting imports and exports over the

¹⁹⁶ ERCOT Ex. 2, Woodfin direct at 13-14.

DC ties will "increase[s] substantially." To account for the interconnection of the SCT DC Tie in outage coordination, Mr. Woodfin testified that ERCOT will need to expend funds to analyze the greater number of contingency scenarios and to improve its predictability of future DC tie flows. Further, ERCOT must determine the appropriate level of conservatism to apply to its outage schedule modeling when adding the SCT DC Tie. Being more conservative will require additional planning for large MW swings between imports and exports over the SCT DC Tie, and less conservatism could result in more situations in which ERCOT would have to interrupt flow over the SCT DC Tie or cancel approved outages.¹⁹⁷

ERCOT recommends the Commission require ERCOT to determine a method for reliably and cost-effectively coordinating outages as a condition to the interconnection of the SCT DC Tie.¹⁹⁸ Staff essentially agrees, and recommends the Commission condition its approval of Garland's application on ERCOT having analyzed, determined, and implemented the system changes or tools necessary to properly coordinate outages before the Garland Project is energized.¹⁹⁹

SCT witness Mr. Bruce generally agreed that the SCT DC Tie will increase the complexity of outage scheduling in ERCOT, and that ERCOT stakeholders will have to determine how conservative to be in the modeling. Mr. Bruce stated that while ERCOT will have to increase its analytical capabilities for this task, there are several other variable components of the system that also require increased analysis. Further, Mr. Bruce testified that actual operating experience should "de-mystify" potential "max import to max export" scenarios. He concluded that the ERCOT stakeholder process is the best venue for determining the needs for the outage coordination situation.²⁰⁰ While SCT agrees that ERCOT will need to expand its outage coordination capabilities, it believes a Commission directive in this regard is unnecessary; however, SCT does not oppose ERCOT's proposed finding that as a condition to interconnection the SCT DC Tie, ERCOT should determine whether changes to outage coordination practices

¹⁹⁷ ERCOT Ex. 2, Woodfin direct at 14.

¹⁹⁸ ERCOT Initial Brief at 8.

¹⁹⁹ Staff Reply Brief at 15.

²⁰⁰ ERCOT Ex. 9, Bruce rebuttal at 19-20.

must be made to accommodate the SCT DC Tie and revise its standards, if necessary. Further, SCT does not oppose ERCOT's proposed ordering paragraph requiring ERCOT to develop a reliable and cost-effective method for coordinating outages after the SCT DC Tie is interconnected, prior to such interconnection.²⁰¹

Analysis and Recommendation

The evidence clearly shows, and the parties agree, that the interconnection of the SCT DC Tie to the ERCOT system will have a significant effect on ERCOT's coordination of outages, and will require ERCOT to conduct studies and analyses to determine what changes, if any, should be made to its processes for coordinating outages once the SCT DC Tie is interconnected. All parties also agree that the ERCOT stakeholder process should serve as the forum for such study and analysis. The preponderance of the evidence shows that this process is vital to ensuring the reliability of the ERCOT system. Therefore, the ALJs find that it would be reasonable and would protect the public interest for the Commission to condition its approval of Garland's application on ERCOT developing and implementing, through the ERCOT stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project, a method for reliably and cost-effectively coordinating outages following the interconnection of the SCT DC Tie. The ALJs further find that such a condition would be consistent with the FERC Order.

7. Coordination with other Balancing Authorities (Preliminary Order Issue No. 4g)

This issue aligns with the issue regarding a coordination agreement between ERCOT and the ISO/RTO and/or RC for the eastern end of the SCT Line, discussed in detail in Section V.E.2., above. SCT witness Mr. Bruce testified that there should be no problem for ERCOT to reach agreement on coordination terms with the eastern-end ISO/RTO and/or RC, given its success in reaching such agreements with other balancing authorities for the DC ties connecting the SPP and Comision Federal de Electricidad systems to ERCOT, as well as with

²⁰¹ SCT Reply Brief at 33.

generation unit operators that switch in and out of ERCOT. He noted the incentive in reaching this agreement because of the geographical distance between the end points on the SCT line, the differences in time zones and geographic regions, and the different mixes of generation resources. All of these factors, according to Mr. Bruce, provide a greater emergency support opportunity than that possible with the SPP and CFE systems. Finally, Mr. Bruce testified that with this incentive, along with the Open Access Technology International e-Tag process, NERC system operator requirements, and market rules and tariffs in place on both sides of the SCT DC Tie putting bounds on the coordination agreement, ERCOT and the ISO/RTO and/or RC on the eastern end will have few substantive issues to resolve in reaching agreement.²⁰²

Analysis and Recommendation

The ALJs find that the preponderance of the evidence shows that it would be reasonable and protect the public interest for the Commission to condition its approval of Garland's application on the requirement that ERCOT negotiate and execute all coordination agreements necessary with the ISO/RTO and/or RC on the eastern end of the SCT Line prior to the energization of the SCT DC Tie and the Garland Project. Such condition would also be consistent with the FERC Order.

8. Reactive Power and Primary Frequency Response (Preliminary Order Issue No. 4h)

ERCOT witness Mr. Woodfin testified that "it would be helpful for Southern Cross to be able to provide Primary Frequency Response (PFR) and Voltage Support Service (VSS)."²⁰³ PFR is an automatic response that is used to stabilize system frequency deviations, and VSS (or reactive power) is used to maintain transmission voltages on the ERCOT system within acceptable limits. According to Mr. Woodfin, both services are provided by generators in ERCOT.²⁰⁴

²⁰² SCT Ex. 9, Bruce rebuttal at 11-12.

²⁰³ ERCOT Ex. 2, Woodfin direct at 16.

²⁰⁴ ERCOT Ex. 2, Woodfin direct at 16.

The issue arises because, when the SCT DC Tie is importing power, it will look like a generation resource on the ERCOT system and could displace ERCOT generation resources supplying PFR and VSS to the ERCOT system at that time. In that case, other ERCOT generators would be called on to provide those necessary services, or ERCOT would have to secure adequate system levels of PFR by procuring more Responsive Reserve Service.²⁰⁵ This circumstance could, under certain system conditions, create reliability concerns by dropping system frequency and voltage below acceptable levels. In its Initial Brief, ERCOT requests that the Commission require it to study and determine whether any or all DC ties should be required to provide or procure PFR and VSS services or the technical equivalents, and implement any standard revisions necessary to effectuate the change.²⁰⁶

SCT witnesses Mr. Bruce and Mr. Gray testified that SCT is not a generator. It is a controllable transmission line. Mr. Bruce testified that SCT should not be required to provide PFR and VSS for that reason, and also because those are the responsibilities of the QSEs and Load-Serving Entities that would rely on the SCT DC Tie imports.²⁰⁷ Mr. Gray took a more nuanced approach and, while he agreed with Mr. Bruce that SCT is not a generator, he posited that there are ways in which SCT could potentially provide PFR.²⁰⁸ There are two potential impediments to that outcome, however. One is technical and the other is administrative. Mr. Gray testified that SCT may be able to provide some measure of PFR if it knows in advance of its planning and design window (which is closing rapidly) how to design the HVDC controls so they can be programmed in a way to provide the service at some level that could be dictated and directed by ERCOT when necessary. The administrative issue could be more problematic because it would involve negotiations with the adjacent balancing authority to allow SCT to "borrow" energy from the electric system on the other side of the SCT Line in SERC in the event ERCOT called on SCT to provide PFR at a particular time. Currently, ERCOT does not have rules in place that would allow SCT to participate in supplying PFR, so ERCOT would have to amend its rules to permit the transaction and negotiate a balancing agreement with SERC that

²⁰⁵ ERCOT Ex. 2, Woodfin direct at 16.

²⁰⁶ ERCOT Initial Brief at 8-9.

²⁰⁷ SCT Ex. 4, Bruce supp. direct at 16.

²⁰⁸ SCT Ex. 10, Gray rebuttal at 7-8.

would allow SCT to acquire the necessary resources very quickly to resolve any issues in ERCOT resulting from SCT DC Tie imports.²⁰⁹

Mr. Gray testified that SCT cannot provide VSS because it does not have the capability within its HVDC equipment to do so. However, Mr. Gray also testified that SCT will provide the functional equivalent service by including reactive devices at the Rusk and Panola Substations that will allow the Garland Project to stabilize voltage levels between the two substations.²¹⁰

In its Reply Brief, SCT takes a more conciliatory approach and states that it is willing to discuss its ability to provide limited low frequency PRF with ERCOT in the same manner as it has discussed and resolved issues with ERCOT in the past. However, SCT points out that any arrangement would require negotiation with and agreement from the balancing authority on the other side of the SCT Line, a task which ERCOT would need to perform when it negotiates a balancing agreement.²¹¹ SCT opposes a condition requiring SCT to provide PFR or VSS support to the ERCOT system.²¹²

Luminant witness Ms. Frazier testified forcefully that SCT should be required to supply reactive power or PFR to the ERCOT system.²¹³ Ms. Frazier's argument is based on the notion that, when the SCT DC Tie is importing power into ERCOT, it will look like a generator on the ERCOT system. In essence, Ms. Frazier testified that, because power imported over the SCT DC Tie looks like a generation resource, it should act like a generator resource and stand ready to provide the same voltage and frequency support to the transmission system required of other ERCOT generators. Barring that, importing power over the SCT DC Tie without requiring it to provide PFR and VSS could have adverse reliability consequences because generators supplying

²⁰⁹ SCT Ex. 10, Gray rebuttal at 8..

²¹⁰ SCT Ex. 10, Gray rebuttal at 8.

²¹¹ SCT discusses its past negotiations with ERCOT in a manner that suggests an amicable discussion, but does not explain whether that discussion was part of a more general stakeholder discussion or a bilateral discussion between ERCOT and SCT.

²¹² SCT Reply Brief at 35.

²¹³ Luminant Ex. 2, Frazier direct at 9.

that service prior to the import may have been backed down, and ERCOT would have to deploy other resources to compensate.²¹⁴

Staff takes the same position as Ms. Frazier for the same reasons.²¹⁵ Staff also recommends that the Commission require ERCOT to study whether and how SCT should provide PFR and VSS to the ERCOT system in advance of the Garland Project being energized. Staff further recommends that SCT's commitment to work with ERCOT on this issue should be formalized as a condition prior to approval of Garland's application. Finally, Staff recommends that the Commission order SCT to pay for the ERCOT study.²¹⁶

Analysis and Recommendation

SCT correctly points out that the SCT DC Tie will be a controllable transmission line, not a generator. However, the SCT DC Tie is also a unique entity in that, while it is a DC tie (of which there are five currently operating in ERCOT), its import and export capacity is larger than all the existing ERCOT DC ties combined. As a result, when it imports power, the SCT DC Tie will look like a generator on the ERCOT system. Depending on the level of imports (*i.e.*, up to 2,100 MW), the SCT DC Tie could look like a *very large* generator on the ERCOT system. That circumstance has reliability implications because, as Luminant and Staff also correctly point out, if SCT imports power and displaces generation that is providing PFR and VSS, then ERCOT will have to react quickly to keep the transmission system frequency and voltage balanced. This is not a minor concern, and could have a detrimental impact on ERCOT customers who are not purchasing power imported over the SCT DC Tie.

The preponderance of evidence supports a conclusion that the Commission should ensure that operation of the SCT DC Tie does not jeopardize the ERCOT system, or other ERCOT customers who are not using power imported over the SCT DC Tie, by causing a situation where

²¹⁴ Luminant Ex. 2, Frazier direct at 9; Tr. at 244-248.

²¹⁵ Staff Statement of Position at 10-11; Reply Brief at 15-16.

²¹⁶ Staff Statement of Positon at 11.

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ERCOT must procure PFR and VSS quickly within a very short period of time. To that end, it is reasonable, and would protect the public interest and be consistent with the FERC Order, for the Commission to condition its approval of Garland's application on a commitment from SCT that it will work with ERCOT and the stakeholders to investigate and resolve the issue, and that SCT will abide by the conclusions reached by ERCOT after its study is complete. This issue should be resolved before energization of the SCT DC Tie and the Garland Project. Like other conditions recommended in this PFD, the ALJs recommend that the Commission direct ERCOT to conduct the study expeditiously, but without imposing a stated timeframe for reaching a decision. ERCOT should keep the Commission apprised of its progress through regular reports or through a compliance project, if the Commission chooses to establish one. Finally, for the same reasons articulated in the section discussing economic dispatch and CMP, above, the ALJs do not recommend that the Commission order SCT to pay for ERCOT's costs in conducting its study.

9. Costs of Ancillary Services (Preliminary Order No. 4i)

The issue of whether the energization of the SCT DC Tie will cause the need for additional ancillary services, and if so, who should pay for them was outlined in detail by ERCOT witness Mr. Woodfin. He testified that NERC Standard BAL-002-1 R3 requires ERCOT to maintain enough reserves to cover the loss of the most severe single contingency (MSSC), which in ERCOT is equivalent to the 1,375 MW associated with the loss of one of the nuclear units at the South Texas Project (STP). Because the SCT DC Tie has the potential to import 2,000 MW, it would become the new supply-side MSSC for ERCOT.²¹⁷ This is important because ERCOT meets the NERC reserve standard by maintaining sufficient Physical Response Capability through Responsive Reserve Service. If the SCT DC Tie becomes the new MSSC, ERCOT will have to plan to procure additional reserves to prepare for the contingency that the SCT DC Tie could be taken out of service through lightning strikes or other catastrophic

²¹⁷ ERCOT Ex. 2, Woodfin direct at 17.

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disasters. The additional reserves would be necessary for ERCOT to maintain system frequency within acceptable limits in such an event.²¹⁸

Mr. Woodfin also testified that the issue exists even if the SCT DC Tie is exporting. In that case, the loss of the SCT DC Tie would be equivalent to the loss of an ERCOT generator of the same size. Losing the SCT DC Tie when it is exporting at a high level would instantaneously send the system frequency to a much higher level, and ERCOT currently does not have any ancillary services designed to address the magnitude of this problem. Mr. Woodfin stated that ERCOT needs to study this issue in much more detail. In its Initial Brief, ERCOT takes no position on whether the costs of ancillary services attributable to the operation of the SCT DC Tie should be directly assigned.²¹⁹ However, ERCOT recommends that the Commission require ERCOT to both evaluate whether ancillary services will be needed to reliably interconnect the SCT DC Tie and implement any modifications to ancillary services procurement as a condition for interconnection of the SCT DC Tie.²²⁰

Luminant witness Ms. Frazier testified that ERCOT practice currently assigns all ancillary service costs to loads based on load-ratio share because the fundamental cost-allocation theory in ERCOT is that load pays.²²¹ Therefore, Ms. Frazier does not recommend a change in the current operating philosophy because, in her view, that would be a major departure from current ERCOT practice.

TIEC takes the position that, because SCT's benefit study was flawed and did not demonstrate any benefit to ERCOT ratepayers, any incremental costs, including costs for ancillary services, should be assigned to SCT, the cost-causer. Mr. Griffey agreed with ERCOT witness Mr. Woodfin that, when the SCT DC Tie imports it will be the new MSSC, and therefore, ERCOT will have to buy additional Regulation-Down service or procure new ancillary services to maintain reliability if the SCT DC Tie were suddenly taken out of service. These

²¹⁸ ERCOT Ex. 2, Woodfin direct at 18.

²¹⁹ ERCOT Initial Brief at 9; ERCOT Ex. 2, Woodfin direct at 17-18.

²²⁰ ERCOT Reply Brief at 9.

²²¹ Luminant Ex. 2, Frazier direct at 10.

costs could be substantial, and in Mr. Griffey's view contribute to the flaws in SCT's benefit study because none of these costs were taken into account, thereby exaggerating the alleged benefits of the SCT DC Tie in the study. As a result, Mr. Griffey recommended that the cost of additional ancillary services to support exports be charged to exports.²²²

TIEC argues in brief that other witnesses are correct that ERCOT's central philosophy from the beginning has been that load pays.²²³ Further, the principle that load pays is premised on the notion that ERCOT is an "island," and certain costs are appropriately socialized to the system based on load-ratio share because they are assumed to benefit the entirety of ERCOT. TIEC has argued throughout this proceeding that there are no, or negligible, benefits from the SCT DC Tie and the Garland Project to ERCOT ratepayers; therefore, it is inappropriate to expect ERCOT ratepayers to subsidize the SCT DC Tie and the Garland Project. According to TIEC:

... ERCOT's rate design principles center around the concept that socializing costs among ERCOT ratepayers only makes sense if those costs benefit ERCOT ratepayers as a whole, and that system falls apart if ERCOT begins subsidizing private power exporters and, by proxy, loads in neighboring regions that will benefit from receiving cheap power from ERCOT.²²⁴

TIEC argues that the SCT DC Tie's exports will result in the need for additional ancillary services; therefore, not only would the quantity of all ancillary services increase, but so would the cost/MW that customers would pay because the cost of ancillary services is based on the same clearing price. That being the case, TIEC argues that any incremental ancillary service costs caused by activities on the SCT DC Tie should be assigned to SCT and not to ERCOT ratepayers, based on the load-ratio share methodology currently in use in ERCOT.

Understandably, SCT's viewpoint differs from TIEC. Mr. Bruce argued that the fundamental cost allocation principle in ERCOT from inception has been that load pays, and

²²² TIEC Ex. 2, Griffey cross rebuttal at 10.

²²³ TIEC Initial Brief at 7; TIEC Reply Brief at 6.

²²⁴ TIEC Reply Brief at 6.

there is no reason to deviate from that principle by directly assigning any potential incremental ancillary service costs to SCT. Moreover, while the SCT DC Tie will theoretically become the MSSC (surpassing the 1,375 MW generating capacity of the STP unit that is the current MSSC), the SCT DC Tie will only be operating in excess of 1,375 MW for various times of the year, and therefore, it is not comparable to a nuclear unit that runs at maximum output every hour of every day of the year. Mr. Bruce also pointed out that the owners of the STP unit have never been directly assigned the costs of ancillary services, nor should they.²²⁵

SCT witness Mr. Parquet testified regarding ancillary services and stated that there was no overriding reason why ERCOT and the Commission should deviate from past practice that ultimately assigns all costs to load.²²⁶ Mr. Parquet argued that QSEs that schedule power over the SCT DC Tie will pay for ancillary service costs under existing ERCOT protocols through the settlement charges associated with exports. In his view, the benefits of the SCT DC Tie are so substantial that there is no reason to directly assign incremental ancillary service costs associated with exports over the SCT DC Tie.

As was his wont during the hearing, SCT witness Mr. Gray took a more conciliatory approach to the issue, and pointed out that it is theoretically possible to control the SCT DC Tie in a manner that could possibly provide some form of additional ancillary services. However, as with the question of PFR discussed in a previous section of the PFD, such capability would have to be built into the SCT DC Tie, and that would have to happen during the design stage (the window for which is quickly closing). In addition, such capability would also have to be agreed upon with the balancing authority on the other side of the SCT Line for SCT to even attempt to provide these services. SCT offers whatever support ERCOT may need during its negotiations with the other potential balancing authority.²²⁷

²²⁵ SCT Ex. 4, Bruce supp. direct at 18, 20.

²²⁶ SCT Ex. 6, Parquet direct at 9.

²²⁷ SCT Ex. 10, Gray rebuttal at 9; SCT Reply Brief at 35.

In brief, SCT emphatically rejects the notion that its activities on the SCT DC Tie will cause a substantial increase in the need for ancillary services, and argues it will certainly not cause an increase in the need for such services to the point that a change is necessary in the manner in which ERCOT currently assigns costs. Moreover, SCT contends that the benefits from the SCT DC Tie project will surpass any possible increase in the need for ancillary services, thereby obviating any suggestion that direct assignment of costs to exports over the SCT DC Tie should be considered. SCT strongly opposes TIEC's position that the Commission should order the direct assignment of incremental ancillary services to the SCT DC Tie. Furthermore, SCT also opposes Staff's positon that the costs to study the issue should be in line with the costs ERCOT has incurred to study similar vexing issues in the past.²²⁸

In line with its other arguments that it should be treated like any other transmission element in ERCOT, and that the SCT DC Tie project will result in measurable benefits to ERCOT, SCT argues that any deviation from current ERCOT cost allocation practices that singles out the SCT DC Tie would be discriminatory because it would treat SCT differently from other ERCOT market participants. Furthermore, any extraordinary treatment that singles out the SCT DC Tie would ignore the basic ERCOT cost allocation principle that load pays because, in SCT's view, during exports load would still pay; they would simply be non-ERCOT loads.²²⁹

Staff argues that the issue of whether incremental ancillary service costs should be directly assigned to SCT should be studied, and that the Commission should order Staff to open a project that could be used to study whether ERCOT's cost assignment methodology for ancillary services should be changed. Based on its central premise that SCT's benefit study is flawed and shows few, if any, benefits for ERCOT ratepayers, Staff then argues that all costs of the study should be assigned to SCT because the failure to include incremental costs, such as the ancillary

²²⁸ SCT Reply Brief at 18.

²²⁹ SCT Reply Brief at 19.

services costs under discussion here, contributed to flaws in the study that, in turn, led to the false assumption that the SCT DC Tie will be a benefit to ERCOT ratepayers.²³⁰

Analysis and Recommendation

Despite their differences, SCT, TIEC, and Staff agree that a project should be opened by the Commission to consider and fully implement appropriate changes to the recovery of costs under 16 Texas Administrative Code § 25.192(e). That section of the Commission's substantive rules pertains to Transmission Service Rates and, in particular, Transmission Rates for Export from ERCOT. Staff contends a project should be opened in which ERCOT's cost allocation methodology, with respect to the collection of ancillary service charges, could be studied and changed, if necessary. ERCOT asks the Commission to order ERCOT to study the issue of whether ancillary service charges will be needed to reliably interconnect the SCT DC Tie and implement any modifications to ancillary service procurement as a condition for the interconnection of the SCT DC Tie. The ALJs assume that all of these issues could be dealt with in one study project.

The ALJs concur in the need for further study of the issue of whether the ancillary services should be calculated and assessed differently from current ERCOT practice. Furthermore, the evidence shows that, despite slightly different language, the parties seem to be in agreement that the matter should be studied holistically, whether at ERCOT or in a Commission project. The ALJs have recommended that a host of issues be delegated to the ERCOT stakeholder process for study and resolution, and see no reason why this issue should be treated any differently. There was no evidence that an open Commission project is any more efficient than the ERCOT stakeholder process. However, if the Commission prefers to open a project, there is no impediment to its doing so.

In recommending further study of the ancillary services issue, the ALJs expressly reject Luminant's suggestion that the current process should not be reviewed or potentially changed

²³⁰ Staff Reply Brief at 21.

because that would be a deviation from current practice. There are a number of issues in this proceeding that were litigated despite the fact that the parties' positions seemingly deviated from "current ERCOT practice." As is apparent from the review of the evidence, the SCT DC Tie is a unique entity that shares elements of standard ERCOT TSPs and ERCOT generators. As such, it is appropriate for the Commission to study the issues in depth in the manner that will best protect the public interest. In that regard, the ALJs find that conditioning the Commission's approval of Garland's application on a requirement that ERCOT: (a) evaluate what additional ancillary services, if any, are necessary for the reliable interconnection of the SCT DC Tie; and (b) implement any needed modifications to ancillary services procurement prior to the interconnection of SCT DC Tie and the Garland Project, would be reasonable, protect the public interest, and consistent with the FERC Order. The Commission should direct that the study process be initiated and executed as expeditiously as possible, but should not impose a date certain by which the matters must be decided. The ALJs also recommend that the Commission include a requirement that SCT participate in the process, and that SCT agree to abide by the results of the project.

Finally, with respect to Staff's request to have SCT pay for the study, the ALJs recommend rejection of that position for the same reasons discussed above with respect to other studies delegated to the ERCOT stakeholder process.

G. Texas Parks & Wildlife Issues

1. Texas Parks and Wildlife Department Recommendations (Preliminary Order Issue No. 5)

Garland and Rusk's EA contains a full record of the consultation letters sent to state and federal agencies regarding the Garland Project, as well as the agencies' respective responses. On October 27, 2015, TPWD was one of several state and federal agencies that provided consultation letters requesting comments on the general description of the proposed Garland Project as it was generally understood at that time.²³¹ On November 24, 2015, TPWD responded

²³¹ Garland Ex. 1, Application, Att. 2, Appendix A at A-1 and A-27.

by reiterating the scope of the project, and included a range of general recommendations.²³² TPWD also included in its November 24, 2015 letter several maps and tables depicting the locations of particular resources or species mentioned in the recommendations.

More specifically, TPWD's November 2015 response highlighted a number of general conceptual concerns related to the Garland Project, as is typical for preliminary TPWD comment letters prepared in response to utility consultation letters. Of particular concern to TPWD were issues related to impacted species under the Migratory Bird Treaty Act, listed rare or endangered species listed in the Texas Natural Diversity Database, and Bald and Golden Eagles protected under the Bald and Golden Eagle Protection Act (BGEPA). TPWD was also concerned with clean water impacts under the Clean Water Act, potential soil stabilization and/or revegetation measures, aquatic effects to state-listed mussels, potential effects on other state fish and wildlife resources such as bottomland hardwood forests, potential impacts to habitat areas listed in the Texas Ecological Systems Classification Project, minimizing risks associated with the inadvertent transporting of zebra mussels and other invasive species to non-contaminated areas, and a potential mitigation plan to provide "compensatory mitigation" for impacts from the transmission line that could not otherwise be avoided. The recommendations contained in TPWD's consultation letter were received and considered by Garland in the preparation of its application and direct testimony,²³³ and by Staff in its recommendations and direct testimony.²³⁴ Many of TPWD's general recommendations were incorporated into Garland's application.235

²³² Garland Ex. 1, Application, Att. 2, Appendix A at A-5; see also Garland Ex. 1, Att. 2 at 6-1, 6-4 -- 6-7 for discussion of November 27, 2015 TPWD response letter.

²³³ Garland Ex. 9, Wise rebuttal at 7-14.

²³⁴ Staff Ex. 1, Mathis direct at 11-13.

²³⁵ See, e.g., Garland Ex. 9, Wise rebuttal at 4.

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On April 18, 2016, TPWD provided to Karen Hubbard of the Commission's legal staff a letter commenting on Garland's application. TPWD's letter was filed in this docket on April 27, 2016, and is included as an exhibit to Mr. Mathis's direct testimony.²³⁶ TPWD recommends that the Garland Project avoid crossing riparian areas, wetlands, and open water habitat. TPWD also recommends that streams be crossed perpendicularly, and cautions the Commission to avoid routing this transmission line parallel to streams. TPWD further recommends using buffer areas to protect wildlife and that Garland consult with various federal and state agencies for guidance regarding avoidance or treatment of certain plant and animal species during the construction of the transmission line. TPWD's recommendations follow the general format of recommendations submitted in other transmission line CCN cases and discuss only environmental routing issues. As a result of its concerns, TPWD recommends the selecction of Route RP95 (consisting of segments 1, 7, 8, 14, 27A, 52, 37, and 43), which was not carried forward into Garland's application. TPWD also recommends that, if the Commission only considers routes actually filed by Garland and Rusk, Route RP93 (consisting of segments 1,7, 8, 14, 27A, 52, 37, and 43) be approved.²³⁷

a. Modifications to the proposed project as a result of TPWD recommendations/comments (Preliminary Order Issue No. 5a)

Other than recommending Routes RP95 or RP93, and requesting the Commission to require that Garland perform various environmental surveys, the only recommendation made by TPWD with respect to construction of the line pertains to a reduced ROW, if feasible, where the route would follow along the existing 138-kV transmission line for approximately 1 mile along

²³⁶ Garland Ex. 9, Wise rebuttal at Ex. KM-3. It should be noted that, unlike some other transmission line CCN cases, TPWD did not present its recommendations as part of an evidentiary exhibit, nor did it provide a witness to explain or support its recommendations. Nonetheless, TPWD's recommendations were addressed by Ms. Wise and Mr. Mathis as part of their respective testimonies, and Mr. Mathis included TPWD's April 27, 2016 letter in his direct testimony.

²³⁷ Garland Ex. 9, Wise rebuttal at 4-5. Garland and Rusk are not opposed to building either Route RP95 or RP93, or any other route composed of noticed segments. However, Garland and Rusk caution that any route approved by the Commission must comply with the routing criteria contained in PURA § 37.056(c) and 16 Texas Administrative Code § 25.101. According to Garland witness Ms. Wise, Routes RP95 and RP93 rank well only if "one only looks at certain environmental factors alone." Garland Ex. 9, Wise rebuttal at 9.

segment 52.²³⁸ Staff does not address TPWD's recommendation, but Garland witness Ms. Wise stated that Garland and Rusk will take TPWD's recommendation "under advisement."²³⁹

Ms. Wise does not recommend physical modifications to the proposed project, and pointed out that reducing the ROWs as suggested by TPWD will have adverse ramifications.²⁴⁰ For example, reducing ROWs for a 345-kV transmission line to parallel a 138-kV transmission line will require adjustment to minimize blowout for the new line. That can be accomplished by either using shorter spans or tightening the tension on the new conductor. Shorter spans for the new 345-kV transmission line would require additional, sturdier poles to carry the increased tension, which translates into greater cost. Taller poles could possibly be used to gain necessary clearances from trees and the paralleled 138-kV transmission line, but may or may not allow for smaller ROWs because of blowout. In any event, the transmission line must always maintain safety clearances with the parallel transmission line, and using taller poles could result in greater visual impact to the aesthetics of the area.²⁴¹

Because of the additional cost and potential visual impacts to a proposal that would parallel the 138-kV transmission line along segment 52, as suggested by TPWD, the ALJs recommend that no modifications be made to the Garland Project based on TPWD's recommendations. In any event, the matter may be moot, as the ALJs are recommending adoption of the Stipulated Route, submitted after the close of the hearing by Garland.²⁴² Stipulated Route RP9 (consisting of segments 1, 7, 9, 13, 23, 24, 28, 31, 34, 41, and 43) does not contain segment 52 and avoids TPWD's concerns related to that segment altogether.

²³⁸ Staff Ex. 1, Mathis direct at Ex. KM-3 at 6, Bates 47.

²³⁹ Garland Ex. 9, Wise rebuttal at 10.

²⁴⁰ Garland Ex. 9, Wise rebuttal at 10.

²⁴¹ Garland Ex. 9, Wise rebuttal at 10-11.

²⁴² Garland Ex. 12, Route Stipulation.

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- b. Conditions or limitations to include in final order as a result of TPWD recommendations/comments (Preliminary Order No. 5b)
- c. Other disposition of TPWD recommendations/comments (Preliminary Order No. 5c)

d. TPWD recommendations or comments that should not be incorporated (Preliminary Order No. 5d)

TPWD makes a number of recommendations, but its recommendations are based solely on environmental concerns and do not attempt to balance the routing criteria with which Garland, Rusk, and the Commission must contend. Notable among TPWD's recommendations, for example, are recommendations to avoid conservation easements (with no consideration by TPWD of added cost, aesthetics, community values, etc.), requiring various types of surveys, reporting encounters with federal and state-listed species, field surveys to determine whether protected species are present (in which case Garland and Rusk should contact US Fish and Wildlife Service (USFWS)), and construction and operation of the transmission line in accordance with the BGEPA using 2006 and 2012 Avian Power Line Interaction Committee (APLIC) suggested guidelines. It is not clear that all of TPWD's recommendations actually involve areas within its jurisdiction and, as noted above, the recommendations tend to be unilaterally focused on environmental criteria without consideration of the more extensive routing criteria contained in PURA § 37.056 and 16 Texas Administrative Code § 25.101.

Ms. Wise testified that Garland and Rusk have already incorporated many, but not all, of TPWD's recommendations into Garland's application, but noted that some of TPWD's recommendations are not possible because Garland and Rusk do not have access to private property during the route assessment and CCN phase of the project.²⁴³ It is not until after the Commission approves the route that Garland and Rusk can physically survey private property to acquire vital and necessary information that will be used to make any necessary routing adjustments to the route approved by the Commission.²⁴⁴ After certification, Garland and Rusk

²⁴³ Garland Ex. 9, Wise rebuttal at 8.

²⁴⁴ Garland Ex. 9, Wise rebuttal at 8, 13.

will coordinate with both USFWS and TPWD, as needed, and will comply with all applicable federal and state statutes and directives.²⁴⁵

Mr. Mathis noted in his testimony that the conditions he recommends are those conditions commonly required by the Commission in transmission line CCN cases. First, Mr. Mathis recommended that Garland and Rusk follow the procedures outlined in the APLIC publications to which he refers in his testimony.²⁴⁶ Second, Mr. Mathis recommended that Garland and Rusk take extreme care to avoid affecting non-targeted vegetation or animal life when using herbicides to control vegetation within the ROWs, and that any herbicides used comply with the Federal Insecticide Fungicide and Rodenticide Act and Texas Department of Agriculture regulations. Third, Mr. Mathis included the normal admonition that Garland and Rusk minimize the amount of vegetation post-construction should be done using native species to the extent possible. Finally, Mr. Mathis recommended that Garland and Rusk avoid, to the maximum extent possible, adverse environmental impacts to sensitive plants and animal species and their habitat, as identified by TPWD and USFWS.

Analysis and Recommendation

The ALJs do not recommend adoption of the specific recommendations included in the TPWD letter of April 18, 2016. The recommendations included in Mr. Mathis's testimony are the same ones typically included in the ordering paragraphs of Commission CCN orders and recognize that, when issues of concern appear during the engineering and design phases of the project, the utility will consult as necessary with the appropriate state or federal agencies and take the necessary action to resolve any issues. Moreover, many of TPWD's recommendations were already taken into account in the preparation of Garland's application, and Garland and Rusk's commitment to comply with any applicable state or federal statute or rule, and to coordinate with TPWD and USFWS as needed, is the commitment typically made by utilities in

²⁴⁵ Garland Ex. 9, Wise rebuttal at 11.

²⁴⁶ Staff Ex. 1, Mathis direct at 12.

transmission line CCN cases. There was no evidence that Garland and Rusk's commitment to work and coordinate with appropriate state and federal agencies has not worked well in the past, and the ALJs recommend that Mr. Mathis's recommendations be adopted and incorporated into the usual and typical ordering paragraphs contained in Commission CCN orders.

2. Texas Parks & Wildlife Code Chapter 26

The Commission can only approve a project that would require the use or taking of public land designated and used as a recreational site if it determines, after proper notice and hearing, that: (a) there is no feasible and prudent alternative to the use or taking of the land; and (b) the project includes all reasonable planning to minimize harm, resulting from the use or taking, to the land as a recreation area.²⁴⁷

a. Whether Chapter 26 Notice and Hearing is Required (Preliminary Order Issue No. 6)

One of the line segments proposed for the Garland Project, Segment 39, crosses the Sabine River Authority's Unit # 630 recreational hunting area.²⁴⁸ Therefore, the ALJs find that for the Commission to approve any route for the Garland Project that uses Segment 39, the notice and hearing provisions of chapter 26 of the Texas Parks and Wildlife Code provisions would apply.

b. Whether Notice of Hearing was Provided (Preliminary Order Issue No. 7)

On April 26, 2016, Garland representatives sent notice of the hearing on the merits in this case via Federal Express to the Executive Director of the Texas Parks & Wildlife Department and the Executive Vice President and General Manager of the Sabine River Authority.²⁴⁹

²⁴⁷ Tex. Parks & Wild. Code § 26.001(a)-(b). This section also applies to public land designated and used as a park, scientific area, wildlife refuge, or historic site. Id.

²⁴⁸ Garland Ex. 1, Application at 15; Garland Ex. 3, Wise direct at 23-24.

²⁴⁹ Garland Ex. 7, Wise affidavit at 1, Ex. 1.

Further, Garland representatives caused to be published notice of the hearing on the merits in this case in the *Henderson Daily News* and the *Panola Watchman*, both qualifying newspapers, on May 8, May 15, and May 22, 2016.²⁵⁰ Therefore, the ALJs find that Garland provided notice of the hearing in this case as required by chapter 26 of the Texas Parks & Wildlife Code.²⁵¹

c. Feasible and Prudent Alternative to the Use of Public Recreation Area (Preliminary Order Issue No. 8)

Route RP9, the route agreed to by Garland, SCT, and the intervening landowners and unopposed by all other parties, does not include Segment 39, and therefore does not cross any public land to which chapter 26 of the Texas Parks & Wildlife Code applies. The ALJs find that Route RP9 is a feasible and prudent alternative to the use of Segment 39, which would require the use and taking of public land designated as a recreational hunting area.

VI. CONCLUSION

After consideration of the factors set forth in PURA § 37.056(c)(4), as well as the agreement between Garland, SCT, and the intervening landowners and the lack of opposition to same, the ALJs recommend the Commission select Route RP9 for the Garland Project. Further, after careful review of the record evidence and consideration of the arguments advanced by all parties, the ALJs find by a preponderance of the evidence that the following conditions to the Commission's approval of Garland's application are reasonable, would protect the public interest, and are consistent with the FERC Order:

• Garland and SCT must honor their representations made in *Southern Cross*, and, specifically, SCT cannot seek to recover from ERCOT ratepayers and Garland cannot seek to recover from wholesale or retail customers in Texas the costs incurred in the construction of the interconnection facilities identified in the interconnection agreement between Garland and SCT;

²⁵⁰ Garland Ex. 7, Wise affidavit at 2, Exs. 2-3.

²⁵¹ Tex. Parks & Wild. Code § 26.002(a)-(c).

- SCT must execute the ERCOT SFMPA prior to energization of the SCT DC Tie and the Garland Project, after ERCOT determines, through its stakeholder process, the appropriate market participation category for SCT, the required changes and modifications to ERCOT protocols, bylaws, and systems required for SCT's participation, and the appropriate market segment for SCT;
- Prior to energization of the SCT DC Tie and the Garland Project, ERCOT must execute a coordination agreement or agreements with the ISO/RTO and/or RC on the eastern end of the SCT Line, consulting SCT as needed during negotiations of such agreement(s) for technical input and guidance;
- ERCOT must, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project, determine what ramp rate restrictions will be necessary to accommodate the interconnection of the SCT DC Tie and implement those restrictions;
- ERCOT must, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project, develop and implement a methodology to reliably and cost-effectively coordinate outages following the interconnection of the SCT DC Tie;
- SCT must provide the Commission with evidence that it has secured the funding to construct the Garland Project, the SCT DC Tie, and all related interconnection facilities before Garland, SCT, and Rusk, and their affiliates, are permitted to seek condemnation of any landowner's land in Panola County for the Garland Project, so long as the landowner provides access to the land for surveying and design purposes;
- Garland and SCT must immediately disconnect the Garland Project from the SCT DC Tie if necessary to prevent ERCOT or any ERCOT utility from becoming subject to FERC rules;
- Garland and SCT must disconnect the Garland Project from the SCT DC Tie if a synchronous connection is made with the transmission line outside of Texas;
- SCT and Garland must obtain approval from the Commission, pursuant to PURA § 37.054, prior to any transfer of the CCN for the Garland Project to Rusk;
- Rusk is prohibited from requesting Garland to upgrade the Garland Project under the TLA;
- ERCOT must, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project, study and determine how best to model the SCT DC Tie in its transmission planning cases and make any necessary revisions to its standard and protocols as appropriate;

- ERCOT must, through its stakeholder process and prior to energization of the SCT DC Tie and the Garland Project, study and determine what transmission upgrades, if any, are necessary to reliably manage congestion resulting from power flows over the SCT DC Tie;
- ERCOT must, through its stakeholder process and prior to energization of the SCT DC Tie and the Garland Project: (a) study and determine whether some or all DC ties should be economically dispatched or whether implementation of a CMP or SPS would more reliably and cost-effectively manage congestion caused by DC tie flow; and (b) implement any necessary revisions to its protocols and standards as appropriate;
- ERCO must, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland project, study and determine whether SCT or any other entity scheduling flows across the SCT DC Tie should be required to provide or procure VSS or PFR, or their technical equivalents, and implement any necessary standard revisions as appropriate; and
- ERCOT must, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project: (a) evaluate what additional ancillary services, if any, are necessary for the reliable interconnection of the SCT DC Tie; and (b) implement any needed modifications to ancillary services procurement.

Finally, after reviewing the evidence and arguments of parties, the ALJs find that all of the other conditions to the Commission's approval of Garland's application proposed by the parties to this case are either unreasonable, not protective of the public interest, or both. Therefore, the ALJs recommend that the Commission not impose any other conditions on its approval of Garland's application other than those set forth above.

VII. FINDINGS OF FACT

General Project Background

- 1. The City of Garland, Texas (Garland) doing business as Garland Power & Light (GP&L), is a not-for-profit municipally owned utility providing service under Certificate of Convenience and Necessity (CCN) No. 30063.
- 2. Garland filed an application with the Public Utility Commission of Texas (Commission) proposing, in conjunction with Rusk Interconnection LLC (Rusk), an affiliate of Southern Cross Transmission LLC (SCT), to design and construct a new double-circuit 345-kilovolt (kV) transmission line connecting a proposed Rusk Switching Station (Rusk

Substation) to be built and owned by Oncor Electric Delivery Company LLC (Oncor), located approximately eight miles northeast of Mount Enterprise in Rusk County, Texas, to a proposed Panola Switching Station (Panola Substation), located on the eastern edge of Panola County adjacent to the Louisiana border, approximately nine miles north of Joaquin (Garland Project). The proposed transmission line would be approximately 37 – 40 miles in length.

- 3. The Panola Substation, to be built by Rusk and owned by Garland, will be interconnected to a new high-voltage, direct-current converter station, to be owned by SCT, adjacent to the Panola Substation but across the border in Louisiana (SCT DC Tie). The SCT DC Tie will interconnect on the Louisiana side to a 400-mile transmission line (SCT Line) that will terminate at an as-yet-to-be-determined end point in the SERC Reliability Corporation (SERC) transmission system.
- 4. Pursuant to a Transmission Line Agreement between Garland and Rusk (the TLA), Garland and Rusk will cooperate in implementing the Garland Project. Garland will be the sole owner of the Garland Project when it is placed in service. Rusk will fund the Garland Project during construction but will convey it to Garland before it is placed in service.
- 5. Garland's application was filed pursuant to §§ 37.051(c-1), (c-2), (g) and (i) of the Public Utility Regulatory Act (PURA).
- 6. The Garland Project will be constructed pursuant to interconnection agreements between Garland and Oncor and Garland and SCT which were appended to the offer of settlement approved by the Federal Energy Regulatory Commission (FERC) in its final order issued in FERC Docket No. TX11-01-001. The final order in FERC Docket No. TX11-01-001 (the FERC Order) requires Garland to provide the interconnection with the SCT DC Tie in accordance with the interconnection agreements attached to the offer of settlement. FERC found that the interconnection is in the public interest and determined it would not cause any Electric Reliability Council of Texas, Inc. (ERCOT) utility or other utility that is not already a public utility under the Federal Power Act (FPA) to become a public utility under the FPA.

Procedural History

- 7. Garland filed its Application on February 25, 2016.
- 8. SCT filed its motion to intervene and direct testimony supporting Garland's application on February 25, 2016.
- 9. The Commission referred this matter to the State Office of Administrative Hearings (SOAH) on February 29, 2016.

- 10. In SOAH Order No. 1, issued March 2, 2016, the Administrative Law Judge (ALJ) concluded that the 185-day deadline for decision in this case is August 29, 2016, assumed jurisdiction, and convened a prehearing conference for March 9, 2016.
- 11. SOAH Order No. 2, issued March 15, 2016, memorialized the prehearing conference, established the procedural schedule, and provided notice that the Hearing on the Merits would occur on May 31 June 3, 2016. SOAH Order No. 2 also established discovery procedures; notified the parties of certain procedural requirements, including filing and document service, and other important actions necessary for parties to take prior to and during the Hearing on the Merits; approved and adopted a Protective Order; and granted the interventions of SCT; CenterPoint Energy Houston Electric, LLC (CenterPoint); ERCOT; Texas Industrial Energy Consumers (TIEC); Jeb James; and Terry Hooper.
- 12. The Commission issued a Preliminary Order on March 22, 2016, identifying the issues to be addressed in this docket as well as issues not to be addressed.
- 13. A settlement/technical conference was held at the Carthage Civic Center in Carthage, Texas on April 20, 2016.
- SOAH Order No. 4, issued on April 15, 2016, granted intervenor status to the following 14. parties: Thomas Patten; Beverly Patten; Bobby LaVaughn Anderson II; Gloria Moffett; Luminant Generation Company, LLC and Luminant Energy Company, LLC (collectively, Luminant); Justin Wagstaff; Joe Beard; East Texas Area Council of the Boy Scouts of America; Andrew Brockett; Teresa Stein; Deep East Texas Electric Cooperative, Inc. (DETEC); Sandra Stein; Amanda R. Choate, Billy Broadaway, Sharon Kirchner, John Davis (Daniel Heritage Farms); Panola-Harrison Electric Cooperative, Inc. (Panola EC); Denese McDaniel-Toler; Meredith Ingram-Gautier; Rusk County Electric Cooperative, Inc. (Rusk EC); Wiley D. Boothe; William and Betty Lou Wood; Elizabeth Lane; Weldon Gray; Joann Miller; Connie Meschke; Jimmy D. Hutchinson; NRG Texas Power, LLC, Reliant Energy Retail Services, LLC, and NRG Power Marketing, LLC (the NRG Companies); Southwestern Electric Power Company (SWEPCO); Texas Competitive Power Advocates (TCPA); Mary Lillibridge on behalf of the W.M. Family Trust; Brian Lillibridge on behalf of the Esther B. Holmes LP; Kay Mauritzen; Sylvia Hunt; Jason Heinkel; Morris Howard; Kenneth Hazel; Tiffany and Stephen Hull; Carl Carswell; Mary Latham; David Langford; Riley Boothe; Jim Holder; Tom and Joan Williams; Bobby Mihlhauser; Billy Langford; Dennis Mark Langford; Vickie Langford Lacy; Craig and Joy Gibbs; Francis G. Gil Barker; Julia H. Greggs; John Carroll; Ed and Sandra Burrows; Danny Milan; Michael Lillibridge (individually and on behalf of W.M. Living Trust); Sue Ann McMillan Ware; Stella M. Johnson (Irrevocable Trust Life Estate); Gloriann Spiller; Fannie Watson (individually and on behalf of the Estate of Clarence C. Baldwin); Ruth Stephens (individually and on behalf of the Estate of Clarence C. Baldwin); Shirley Hamilton; Charles Spears; and Clive W. Fields.
- 15. SOAH Order No. 5, issued April 27, 2016, granted intervenor status to Sherri Waters, Johnny Holmes, and Jason Spiller.

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- 16. SOAH Order No. 6, issued May 5, 2016, granted Larry Fields' request for reinstatement as an intervenor and dismissed Terry Hooper as an intervenor.
- 17. The hearing on the merits was held on May 31-June 3, 2016.
- 18. SOAH Order No. 8, issued June 3, 2016, dismissed certain intervenors who failed to file a statement of position or direct testimony pursuant to the proceedural schedule and granted John Paul Davis' request to withdraw from the proceeding.
- 19. On June 8, 2016, the remaining intervening landowners, Garland, and SCT filed an unopposed Stipulation Concerning Transmission Line Route (Route Stipulation) and a motion to admit the Route Stipulation into evidence.
- 20. On July 26, 2016, the ALJs issued SOAH Order No. 9, admitting the Route Stipulation into evidence.

Notice

- 21. Garland provided notice and hosted public open-house meetings as required under 16 Texas Administrative Code (TAC) § 22.52(a)(4).
- 22. On December 1 and 2, 2015, two open houses were held at the Carthage Civic Center located at 1702 South Adams, Carthage, Texas.
- 23. Direct notice of Garland's application was mailed to approximately 631 owners of approximately 1,078 properties within 500 feet of the centerline for each of Garland's proposed routes presented at the open-house meetings.
- 24. On February 25, 2016, Garland provided written notice of its application by first class mail to the owners of land, as stated on the current county tax rolls in Rusk and Panola Counties, Texas, who are directly affected by the Garland Project.
- 25. Garland sent notices of its application to utilities providing similar service within five miles of the Garland Project by priority mail on February 25, 2016.
- 26. Notice of Garland's application was sent to the county officials in Rusk and Panola Counties and to the mayors of the cities within five miles of the Garland Project by priority mail on February 25, 2016.
- 27. Written notice of Garland's application was sent to the Office of Public Utility Counsel (OPUC) on February 25, 2016.
- 28. A copy of the Environmental Assessment and Alternative Route Analysis Report for the Rusk to Panola 345-kV Transmission Line Project (EA) performed for the Garland Project by Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was delivered to the Texas Parks and Wildlife Department (TPWD) on February 25, 2016.

- 29. Garland caused notice of its application to be published in the *Henderson Daily News* and in the *Panola Watchman* on February 28, 2016. These are papers of general circulation in Rusk and Panola counties.
- 30. On March 22 and 23, 2016, Garland sent supplemental notice of its application to certain affected landowners after Garland was informed that those landowners did not receive the original notice.
- 31. Notice of Garland's application was published in the *Texas Register* on March 11, 2016.
- 32. On April 26, 2016, notice was provided pursuant to Chapter 26 of the Texas Parks and Wildlife Code to the TPWD and the Sabine River Authority. Also, pursuant to chapter 26 of the of the Texas Parks & Wildlife Code, notice was published in the *Henderson Daily News* and *Panola Watchman* on May 8, May 15, and May 22, 2016.

Adequacy of Application

- 33. No party challenged the sufficiency of Garland's application, and the application is sufficient.
- 34. No party challenged the adequacy of Garland's proposed routes, and the routes are adequate.

Reasonable Conditions to Protect the Public Interest

Representations Made in Southern Cross

- 35. In FERC Docket No. TX11-1-001, Southern Cross Transmission LLC, 147 FERC ¶ 61,113 (2014) (Southern Cross), SCT represented it would not seek to recover from ERCOT ratepayers and Garland represented it would not seek to recover from wholesale or retail customers in Texas the costs incurred in the construction of the interconnection facilities identified in the interconnection agreement between Garland and SCT.²⁵²
- 36. A condition to approval of Garland's application requiring Garland and SCT to give effect to their representations made in *Southern Cross* is reasonable, would protect the public interest, and would be consistent with the FERC Order.

Market Participation Agreement

37. A condition to the approval of Garland's application requiring SCT execute the ERCOT Standard Form Market Participant Agreement (SFMPA) prior to energization of the Garland Project is reasonable, consistent with the FERC Order, and would protect the public interest,.

²⁵² Garland Ex. 1, Application, Att. 2 at 10, 54-55.

- 38. SCT does not currently meet the requirements to be defined as any one of the existing eight market participant types on the SFMPA form.
- 39. ERCOT will need to revise and make modifications to the SFMPA and its bylaws, protocols, and systems as necessary to allow SCT to register as a market participant and execute the SFMPA.
- 40. SCT will also need to be placed within one of the existing ERCOT market segments.
- 41. The determination of the appropriate market participation category for SCT, the required modifications to ERCOT protocols, bylaws, and systems required for SCT's participation, and the appropriate market segment for SCT should be made through the ERCOT stakeholder process.
- 42. Requiring ERCOT to, prior to the energization of the SCT DC Tie and the Garland Project: (a) determine the appropriate market participation category for SCT; (b) implement the necessary modifications to the SFMPA and its protocols, bylaws, and systems for SCT's participation; and (c) determine the appropriate market segment for SCT is a reasonable condition to approval of Garland's application, will protect the public interest, and is consistent with the FERC Order.

Coordination Agreement

- 43. Coordination agreements between ERCOT and the Independent System Operator (ISO)/ Regional Transmission Organization (RTO) and/or Reliability Coordinator (RC) on the eastern end of the SCT Line are necessary to ensure reliable operations on the ERCOT grid when the SCT DC Tie is energized.
- 44. Requiring negotiation and execution of a coordination agreement or agreements between ERCOT and the ISO/RTO and/or RC on the eastern end of the SCT Line prior to energization of the SCT DC Tie and the Garland Project is a reasonable condition to the approval of Garland's application. This condition will protect the public interest and is consistent with the FERC Order.

Inclusion of SCT DC Tie in ERCOT Planning Models

- 45. A DC tie should be included in ERCOT's modeling for transmission planning when it reaches the point in its development when it is likely that it will be constructed and completed.
- 46. ERCOT protocols do not currently include standards for determining the point in time for including proposed DC tie projects to transmission modeling.
- 47. Determination of when to include a proposed DC tie project in transmission planning models is important in order to accomplish the goals of transmission planning and to avoid unnecessary costs.

48. ERCOT, through its stakeholder process, should make the final determination as to the point at which the SCT DC Tie should be included in ERCOT's transmission planning models.

Treatment of DC Ties in ERCOT Planning Models

- 49. ERCOT performs transmission planning modeling to identify future system needs for improvements in grid infrastructure.
- 50. The assumptions made in transmission planning regarding whether DC ties will be exporting or importing, and at what levels, potentially results in identification of different system needs.
- 51. ERCOT currently models DC ties in all planning studies using historical operations of those ties, assessing resulting constraints on the system.
- 52. The SCT DC Tie has no historical operations, and it is unclear whether the operational history of the much smaller DC ties in the ERCOT system are suitable for comparison to the SC DC Tie, given its size and its different interconnection point.
- 53. ERCOT's current practices of modeling DC ties in its planning studies must be reviewed for needed revision to account for the interconnection of the SCT DC Tie.
- 54. A condition to approval of Garland's application requiring ERCOT, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project, to study and determine how best to model the SCT DC Tie in its transmission planning cases and make any necessary standard revisions is reasonable, would protect the public interest, and is consistent with the FERC Order.

Transmission Upgrades

- 55. Some degree of transmission upgrades may be necessary to accommodate electrical flows across the SCT DC Tie.
- 56. To ensure reliability in the operation of the ERCOT system, it is necessary to determine what transmission upgrades will be needed, if any, to adequately address potential congestion caused by power flows over the SCT DC Tie.
- 57. The record in this proceeding does not resolve the question of whether ERCOT ratepayers derive sufficient benefit from the SCT DC Tie and the Garland Project to include any necessary transmission-upgrade costs as standard ERCOT transmission elements recoverable through the statewide transmission cost-of-service methodology currently in place.

- 58. Whether such transmission upgrades are necessary, and if so, who should pay for them, is best left to the ERCOT stakeholder process, where other potentially affected parties can weigh in and offer their input outside of the compressed time limits of this case.
- 59. Depending on the level of benefits that inure to ERCOT ratepayers from the SCT DC Tie, the Commission and ERCOT must decide whether such benefits, if any, require amendment of the current methodology for recovering transmission costs in ERCOT, or whether any transmission upgrade costs should be directly assigned to SCT and entities using the SCT DC Tie.
- 60. A condition to approval of Garland's application requiring ERCOT, through its stakeholder process and prior to energization of the SCT DC Tie and the Garland Project, to study and determine what transmission upgrades, if any, are necessary to facilitate exports over the SCT DC Tie is reasonable, protects the public interest, and is consistent with the FERC Order.
- 61. The ERCOT stakeholder process to determine what transmission upgrades may be necessary should not be tied to a date certain, but should be initiated and completed expeditiously to provide the Commission with the necessary data to protect the public interest and to ensure compliance with the FERC Order.
- 62. The costs of the ERCOT stakeholder process to determine what transmission upgrades may be necessary should not be directly assigned to SCT, but should be undertaken as part of ERCOT's standard practices, should include all interested stakeholders, and should involve the appropriate ERCOT committees and study groups.

Economic Dispatch and Congestion Management

- 63. There are at least two methods for managing congestion attributable to SCT DC Tie imports: (a) subjecting the SCT DC Tie to Security-Constrained Economic Security (SCED); and (b) implementing a congestion management program (CMP), including the possible use of a special protection scheme (SPS).
- 64. SCED is typically associated with generation assets, but when the SCT DC Tie is importing it appears as a generation resource on the ERCOT system, which differs from how current transmission assets owned by ERCOT TSPs appear on the system.
- 65. There is insufficient evidence in the record to determine whether it is appropriate to subject the SCT DC Tie to SCED as a way to address congestion created by flows over the SCT DC Tie.
- 66. There is insufficient evidence in the record to determine whether a CMP, including an SPS, is an appropriate remedy to impose on the SCT DC Tie to address congestion created by flows of the SCT DC Tie.

- 67. There is insufficient evidence in the record to preclude the use of any other appropriate method to address congestion associated with the SCT DC Tie if ERCOT determines that other measures may, or should, be taken to resolve congestion caused by flows over the SCT DC Tie.
- 68. It is reasonable, protective of the public interest, and consistent with the FERC Order to condition approval of Garland's application on a requirement that ERCOT, through its stakeholder process and prior to the energization of the SCT DC Tie and the Garland Project: (a) study and determine whether some or all DC ties should be economically dispatched through a SCED, or whether implementation of a CMP or SPS would more reliably and cost-effectively manage congestion caused by DC tie flows; and (b) implement any necessary revisions to its protocols and standards as appropriate.
- 69. The ERCOT stakeholder process to study the use of SCED, a CMP, an SPS, or any other process to address congestion should not be tied to a date certain, but should be initiated and completed expeditiously.
- 70. The costs of the SCED/CMP stakeholder process at ERCOT should not be directly assigned to SCT, but should be undertaken as part of ERCOT's standard practices, should include stakeholders, and should involve the appropriate ERCOT committees and study groups.

Ramp Rate Restrictions

- 71. The SCT DC Tie will have the ability to ramp up, ramp down, or change the direction of power flow in a short period of time.
- 72. Ramp rate limits on the SCT DC Tie will be needed to limit frequency deviations associated with these sudden changes in exports and imports of power over the SCT DC Tie and the inability of other resources on the system to match the rate of ramping on the SCT DC Tie.
- 73. Flows over the SCT DC Tie will not be controlled by ERCOT's market management tools, so other generators will have to be dispatched to address the impacts of flows over the SCT DC Tie.
- 74. To maintain proper frequency and balance between generation and load, the generators on the ERCOT system must ramp at the same rate as the SCT DC Tie.
- 75. Generating units cannot change their output instantaneously, and different units will change output at different rates depending on current operating conditions.
- 76. Without a ramp rate limit, ERCOT would have to procure and deploy ancillary services to compensate for the frequency variability in imports and exports of power resulting from ramping by the SCT DC Tie.

- 77. Currently, the system used to schedule flows on DC ties in the ERCOT system builds in a ten-minute ramp each hour, which encompasses the last five minutes and first five minutes of every hour, to accommodate flows from one hour to the next.
- 78. The current ramping rules may create operational issues in ERCOT given the amount of power that can flow across the SCT DC Tie.
- 79. Revisions to ERCOT's current ramp rate restrictions will need to be made to ensure reliability on the ERCOT system to account for the interconnection of the SCT DC Tie.
- 80. An extension of the current ten-minute ramping period could effectively achieve a ramp rate limit for the SCT DC Tie, but such extension would require a change to the scheduling process.
- 81. DC ties could be integrated with ERCOT market tools to allow for more reliable management of DC tie ramping behavior.
- 82. Analysis through the ERCOT stakeholder process would be helpful to determine what option(s) will work best to resolve the ramp rate limit issue concerning the SCT DC Tie.
- 83. Requiring ERCOT, through its stakeholder process, to (a) determine what ramping restrictions will be necessary to accommodate the interconnection of the SCT DC Tie, and (b) implement those restrictions prior to the energization of the Garland Project is a reasonable condition to the approval of Garland's application that protects the public interest and is consistent with the FERC Order.

Outage Coordination

- 84. One of ERCOT's core functions is to coordinate generator and transmission outages to ensure continuous and reliable operation of the transmission system.
- 85. To properly coordinate generator and transmission outages, ERCOT must predict future DC tie imports and exports as accurately as possible to determine whether requested outages of generators or transmission elements can be granted while maintaining system reliability.
- 86. Actual DC tie flows cannot be known with reasonable certainty, especially with enough time to allow for outage scheduling.
- 87. Incorrect predictions of imports and exports over DC ties can result in necessary curtailments of flows over the ties or withdrawals of outage requests.
- 88. The interconnection of the SCT DC Tie to the ERCOT system will make ERCOT's coordination of generation and transmission outages significantly more challenging.

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- The interconnection of the SCT DC Tie to the ERCOT system will require ERCOT, through its stakeholder process, to conduct studies and analyses to determine what
- 90. ERCOT's determination of what changes may need to be made to its processes for coordinating outages once the SCT DC Tie is interconnected is vital to ensuring the reliability of the ERCOT system.

changes, if any, should be made to its processes for coordinating outages.

91. It would be reasonable and would protect the public interest for the Commission to condition its approval of Garland's application on ERCOT developing and implementing, through the ERCOT stakeholder process, a method for reliably and cost-effectively coordinating outages following the interconnection of the SCT DC Tie prior to the energization of the Garland Project. Such condition would be consistent with the FERC Order.

Reactive Power and Primary Frequency Response

- 92. Primary Frequency Response (PFR) is an automatic response that is used to stabilize ERCOT system frequency deviations.
- 93. Reactive Power, also discussed as Voltage Support Service (VSS), is used to maintain transmission voltages on the ERCOT system within acceptable limits.
- 94. PFR and VSS are services provided by generation sources in ERCOT.
- 95. The SCT DC Tie is a controllable transmission line, but when it imports power it looks like a generation resource on the ERCOT system.
- 96. Because of its duality, SCT DC Tie is a unique entity because while it is not a generator, when it imports it has many attributes of a generator. Similarly, when it is importing it may displace other ERCOT generators that are providing PFR and VSS.
- 97. If the SCT DC Tie displaces ERCOT generators that are providing PFR or VSS, ERCOT would have to procure those services from other generators, or could procure additional Responsive Reserve Service.
- 98. If the SCT DC Tie displaces ERCOT generation assets providing PFR and VSS at the time, that circumstance can cause reliability problems in ERCOT.
- 99. It may be possible for the SCT DC Tie to procure or "borrow" power from the balancing authority on the other side of the SCT Line to provide PFR, if SCT knows far enough in advance that it can design and construct the SCT DC Tie with sufficient technological controls to allow such a transfer.

- 100. The SCT DC Tie cannot provide PFR without the cooperation of the balancing authority on the other side of the SCT Line, and ERCOT would need to negotiate the ability of SCT to import that service over the SCT DC Tie.
- 101. The SCT DC Tie may not be able to provide VSS, but it may be possible to compensate by using reactive devices at the Rusk and Panola Substations.
- 102. The Commission should not impose as a condition to the approval of Garland's application that the SCT DC Tie must provide PFR and VSS.
- 103. ERCOT should ensure the operation of the SCT DC Tie does not jeopardize the ERCOT system or ERCOT customers not using power imported over the SCT DC Tie by causing a situation where ERCOT must procure PFR and VSS within a short period of time.
- 104. The Commission should require ERCOT to initiate and undertake a stakeholder process to determine whether the DC ties, particularly the SCT DC Tie, can provide PFR and VSS, or their technical equivalents, and if so, how that process should be performed.
- 105. The Commission should require, as a condition of its approval of Garland's application, that SCT: (a) work with ERCOT in the ERCOT stakeholder process to determine whether the DC ties, particularly the SCT DC Tie, can provide PFR and VSS, or their technical equivalents; and (b) agree to abide by the decisions reached by ERCOT as a result of the process. Such a condition is reasonable, would protect the public interest, and is consistent with the FERC Order.
- 106. The ERCOT stakeholder process to determine whether the DC ties, particularly the SCT DC Tie, can provide PFR and VSS, or their technical equivalents, should be initiated and undertaken expeditiously, but should not be tied to a date certain.
- 107. The cost of the ERCOT PFR and VSS studies should not be directly assigned to SCT, but should be undertaken as part of ERCOT's standard practices, should include stakeholders, and should involve the appropriate ERCOT committees and study groups.

Cost of Ancillary Services

- 108. To comply with the North American Reliability Corporation (NERC) reserve requirements, ERCOT maintains enough reserves to cover the loss of the most severe single contingency (MSSC).
- 109. Currently, the MSSC in ERCOT is equivalent to the 1,375 MW associated with one of the nuclear units at the South Texas Project.
- 110. ERCOT maintains the NERC reserve requirement standard by maintaining sufficient Physical Response Capability through Responsive Reserve Service.

- 111. If the SCT DC Tie becomes operational, it will become the new MSSC, requiring ERCOT to procure additional reserves to prepare for the contingency that power across the SCT DC Tie might be disrupted or the line might be taken out of service. The additional reserves would be necessary for ERCOT to maintain system frequency within acceptable limits if such an event occurred.
- 112. The SCT DC Tie will become the new MSSC in ERCOT whether it is importing or exporting.
- 113. ERCOT practice currently assigns ancillary service costs to loads based on load-ratio share based on ERCOT's fundamental cost-recovery philosophy that load pays.
- 114. If the operation of the SCT DC Tie causes ERCOT to have to procure additional ancillary services, it may be unreasonable to expect ERCOT loads to pay their load-ratio share of ERCOT's costs to procure additional ancillary services if they do not benefit from the SCT DC Tie in a measurable way.
- 115. It is physically possible for the SCT DC Tie to procure some form of ancillary services from the balancing authority on the other side of the DC Tie. However, there are two impediments to that possibility. The first impediment is technical and would involve designing the SCT DC Tie to accommodate such transfers. The second impediment pertains to ERCOT's ability to negotiate an arrangement with the balancing authority on the other side of the SCT Line that would provide the transfer of power across the SCT DC Tie in the event of a sudden ERCOT emergency.
- 116. It is reasonable, protective of the public interest, and consistent with the FERC Order to condition approval of Garland's application on a requirement that ERCOT, through its stakeholder process and prior to the interconnection of the SCT DC Tie and the Garland Project: (a) evaluate what additional ancillary services, if any, are necessary for the reliable interconnection of the SCT DC Tie; and (b) implement any necessary modifications to ancillary service procurement practices or procedures.
- 117. The stakeholder process should also investigate whether the current ERCOT costrecovery practice should be amended to accommodate conclusions that the ERCOT stakeholder process may reach. If ERCOT cannot internally implement any resulting changes resulting from its investigation, it should be required to inform the Commission as soon as practicable in the event recommended changes must be implemented through a rule change.
- 118. The ERCOT stakeholder process should be initiated and undertaken expeditiously but should not be tied to a date certain.
- 119. The cost of the ERCOT study regarding the procurement of additional ancillary services, if any, should not be directly assigned to SCT, but should be part of ERCOT's standard practice, should include stakeholders, and should involve the appropriate ERCOT committees and study groups.

Condemnation of Easements

- 120. It is reasonable and will protect the public interest for the Commission to prescribe a condition to its approval of Garland's application that prohibits Garland, SCT, Rusk, and their affiliates, from seeking condemnation of any landowner's land in Panola County for the Garland Project, so long as the landowner provides access to the land for surveying and design purposes, until SCT provides the Commission with evidence that it has secured the funding to construct the complete interconnection project, including the Garland Project, the SCT DC Tie, and all related interconnection facilities.
- 121. A condition to the Commission's approval of Garland's application prohibiting condemnation until SCT provides the Commission proof that it has: (a) secured financing for the SCT Line; (b) obtained all necessary regulatory approvals in Louisiana for the SCT DC Tie; and (c) constructed at least 75% of the SCT DC Tie would protect the public interest, but is not reasonable.

Disconnection from the SCT DC Tie

- 122. The interconnection agreements between Garland and Oncor and Garland and SCT give the parties the right to immediately disconnect the Garland Project from the SCT DC Tie if such action is necessary to prevent FERC from asserting jurisdiction over ERCOT or an ERCOT utility. However, the agreements do not require the parties to disconnect under these circumstances.
- 123. ERCOT bylaws prohibit ERCOT members from taking action to cause ERCOT or an ERCOT member to become a "public utility" subject to FERC rules, but do not require ERCOT members to take action to prevent ERCOT or ERCOT members from becoming a "public utility" subject to FERC rules.
- 124. Garland will disconnect the Garland Project if necessary to prevent (a) FERC from asserting jurisdiction over ERCOT or an ERCOT utility, or (b) ERCOT or ERCOT members from becoming a "public utility" subject to FERC rules.
- 125. A condition for the Commission's approval of Garland's application requiring Garland and SCT to immediately disconnect the Garland Project from the SCT DC Tie if necessary to avoid ERCOT or any ERCOT utility becoming subject to FERC rules and jurisdiction is reasonable to protect the public interest and is consistent with the FERC Order.
- 126. There is insufficient evidence in the record to prove that a synchronous connection could not be made with the Garland Project transmission line outside of Texas.
- 127. There is insufficient evidence in the record to prove that the Garland Project could not be disconnected from the SCT DC Tie if a synchronous connection was made with the transmission line outside of Texas, or that such disconnection would be unreasonable.

- 128. A condition to the Commission's approval of Garland's application requiring Garland and SCT to disconnect the Garland Project from the SCT DC Tie if a synchronous connection is made with the transmission line outside of Texas is reasonable to protect the public interest and consistent with the FERC Order.
- 129. Garland will not wait until all appeals have run before complying with a Commission order to disconnect.
- 130. Garland and SCT understand that a Commission order is effective during the pendency of an appeal absent a stay or other order suspending its effectiveness.
- 131. Garland and SCT will comply with an effective Commission order to disconnect the Garland Project from the SCT DC Tie.
- 132. A condition to the Commission's approval of Garland's application requiring SCT and Garland to disconnect the Garland Project from the SCT DC Tie pursuant to a Commission order to do so is reasonable, protects the public interest, and is consistent with the FERC Order.
- 133. A condition to the Commission's approval of Garland's application requiring SCT and Garland to disconnect the Garland Project from the SCT DC Tie pursuant to a Commission order to do so is redundant and not necessary.
- 134. There is no evidence in the record that conditioning the Commission's approval of Garland's application on disconnection by Garland or Oncor in the event SCT challenges Commission jurisdiction or ERCOT Protocols would protect the public interest.
- 135. If SCT challenges a Commission rule or ERCOT Protocol at some point in the future, the Commission at that time will make a decision based on the facts and the law whether such a challenge has merit.

Put and Call Options Under the TLA

- 136. The Transmission Line Agreement between Garland and Rusk (TLA) allows Garland to transfer ownership of the Garland Project back to Rusk and for Rusk to require such a transfer, under certain circumstances and for certain payments.
- 137. SCT and Garland agree that a transfer of the Garland Project from Garland to Rusk would require Commission approval pursuant to PURA § 37.054 and would not automatically provide Rusk with a CCN for the facilities.
- 138. Conditioning the Commission's approval of Garland's application on a requirement that Rusk meet the requirements of PURA § 37.051(e) in the event a transfer of the Garland Project is sought under the TLA is not reasonable because: (a) a transfer has not yet been sought; (b) Garland agrees to a condition that a transfer of the Garland Project to Rusk

requires Commission approval under PURA § 37.054; and (c) it is not clear whether such a transfer would be subject to the requirements of PURA § 37.051(e).

139. A condition to the Commission's approval of Garland's application requiring any transfer of the CCN for the Garland Project to Rusk be approved by the Commission pursuant to PURA § 37.054 is reasonable, would protect the public interest, and is consistent with the FERC Order.

Treatment of Garland as Affiliate of SCT and the Pattern Companies

140. A condition to the Commission's approval of Garland's application prohibiting Rusk from requesting Garland to upgrade the Garland Project under the TLA is reasonable to protect the public interest and consistent with the FERC Order.

Routing Issues

- 141. Garland retained Burns & McDonnell to prepare the Environmental Assessment and Alternative Route Analysis Report for the Rusk to Panola 345-kV Transmission Line Project (EA) for the Garland Project.
- 142. The EA evaluated routes using routing criteria addressing factors such as land use, aesthetics, cultural resources, the number of potentially affected habitable structures, and potential environmental impacts for each of the alternative routes. Garland balanced its environmental and land use analysis with engineering and construction constraints, costs, public input, and community values.

Route Stipulation

- 143. On June 8, 2016, the intervening landowners, Garland and SCT filed an unopposed Stipulation Concerning Transmission Line Route (Route Stipulation) supporting selection of Route RP9 by the Commission.
- 144. Route RP9 is comprised of noticed segments that were not changed or modified from the segments as filed in the application.
- 145. Route RP9 is a viable, feasible, and reasonable route considering the environmental, engineering, and land use constraints in the Garland Project area.
- 146. Route RP9 also satisfies the other criteria the Commission considers in selecting a transmission line route, as reflected in these findings of fact.
- 147. The Garland Project should be constructed on Route RP9.

Effect of Granting the CCN

- 148. Garland has been providing service to its ratepayers since 1923, owns and operates both high voltage transmission lines and electric generating stations, is a qualified scheduling entity (QSE) within ERCOT, and has strong bond ratings.
- 149. Garland has the capability to operate the Garland Project reliably and effectively.
- 150. No existing facilities of other utilities will be utilized for the Garland Project.
- 151. Oncor conducted several studies that analyzed the Garland Project's effects on other utilities and the ERCOT grid, and based on those studies, the FERC Order found that nothing in the application indicated that the requested interconnection and transmission service would impair the continued reliability of the affected electric systems.
- 152. Existing utilities within the study areas include existing 115-kV, 138-kV, and 345-kV electric transmission lines and associated substations primarily owned and operated by Oncor and SWEPCO. Cooperative utilities, including DETEC, Panola EC, and Rusk EC, also own and operate transmission lines, distribution lines, and substations within the study area.
- 153. Garland and Rusk have executed agreements with SWEPCO, DETEC, Panola EC, and Rusk EC that provide for Garland to keep each utility informed about the Garland Project, to coordinate with each utility concerning paralleling or crossing of facilities, and to avoid or mitigate impacts on their facilities.
- 154. Garland and Rusk have committed to make reasonable efforts to coordinate with these neighboring utilities to mitigate impacts of the Rusk to Panola line on their facilities.
- 155. The FERC Order also stated that compliance with the Order and the Offer of Settlement will not cause ERCOT, Oncor, CenterPoint, or any other ERCOT utility or other entity that is not already a public utility to become a "public utility", as that term is defined by section 201 of the FPA, and subject to FERC jurisdiction.

Community Values

- 156. Garland executed a public involvement program to engage potentially impacted landowners, elected officials, and other stakeholders. The program consisted of one-on-one meetings with the County Judges of both counties in which the Garland Project will be constructed, county commissioners who represent the majority of the area, and local electric cooperatives who provide service in the area.
- 157. Garland also held two public open-house meetings within the community to solicit comments, concerns, and input from residents, landowners, public officials, and other interested parties concerning the proposed Garland Project, the preliminary alternative routes, and the overall transmission line routing process.

- 158. The preliminary alternative routes identified by Burns & McDonnell were presented at the open-house meetings. Participants at the open-house meetings received a written questionnaire to communicate their opinions and provide input into the routing process. Burns & McDonnell also provided computer stations at the open houses, as well as an online option for landowners to provide input on their issues of greatest concern related to the Garland Project.
- 159. Following the open-house meetings, Burns & McDonnell modified the existing segments, and identified a total of 96 primary routes. After evaluating the 96 primary routes, 12 proposed routes were selected to carry forward through the rest of the evaluation process and to submit to the Commission.
- 160. Based on information gathered at the open houses, several segments were modified to reduce impacts to habitable structures and other land use features to the extent feasible, and some new segments were added and others deleted.
- 161. Local, state, and federal agencies and officials were contacted by letter in October and November 2015 to solicit comments, concerns and information regarding the potential impact of the proposed transmission line.
- 162. Responses from governmental agencies were considered in the selection and evaluation of alternative routes.
- 163. Route RP9 is supported by all of the intervening landowners in the case, and therefore best reflects community values.

Recreational and Park Areas

- 164. Two of the proposed routes cross a park or recreational area RP28 and RP82. Route RP28 (Central) crosses the George W. Pirtle Scout Reservation and Route RP82 (Southern) crosses land managed by the Sabine River Authority and identified by TPWD as Unit #630 hunting area. Both proposed routes appear to cross in areas of the properties that are not developed and are heavily wooded. Route RP82 does not have any park and recreational area within 1000 feet (excluding Unit #630 hunting area). Route RP16 (Northern) is the only proposed route that does not cross any park and has no identified park and recreational area within 1000 feet. All of the remaining proposed routes each have one park and recreational area located within 1000 feet of the route.
- 165. No significant impacts to the use or enjoyment of the parks and recreation facilities located within the study area are anticipated from any of the primary alternative routes.
- 166. No adverse impacts area anticipated for any of the fishing or hunting areas from any of the primary alternative routes.
- 167. Route RP9 does not cross any recreational or park areas and has one recreational and park area located within 1,000 feet, like most of the other proposed routes.

Historical and Aesthetic Values

- 168. Cultural resources are sites, features, structures, or properties that are 50 years old or older and that may hold significant cultural, historical, or scientific value.
- 169. High-Probability Areas (HPAs) are locations that are usually identified as having a high probability for the occurrence of prehistoric sites and include areas where the proposed Garland Project crosses water, stream confluences, drainages, alluvial terraces, wide floodplains, upland knolls, and areas where lithics (workable stone) could be found.
- 170. The Texas Historical Commission (THC), on November 4, 2015, indicated that previous surveys in the area have resulted in identification of archeological sites that could be affected by the Garland Project.
- 171. THC indicated that an archeological survey may be required for portions of the study area and that a project archeologist performing such a survey must first obtain an Antiquities Permit from THC's office.
- 172. Garland and Rusk will coordinate with the THC to determine whether significant cultural, historical, or archeological sites will be affected and what mitigation efforts could be required to limit impacts.
- 173. Garland's proposed routes cross between 57,740 feet and 102,100 feet of HPAs and would be located within 1,000 feet of between one and five recorded cultural sites.
- 174. Route RP9 crosses 70,690 feet of HPAs, crosses no recorded cultural sites, and would be located within 1,000 feet of one recorded cultural site.

Environmental Integrity

- 175. Garland, through Burns & McDonnell, engaged in an extensive multi-step process to determine potential environmental impacts, and used the information gathered to engage in substantial mitigation of potential impacts through that process. The environmental study process involved delineating a study area, collecting agency input, gathering data regarding the study area, performing constraints mapping, identifying preliminary alternative routes, and reviewing and adjusting alternative routes following field reconnaissance. Garland reviewed the preliminary alternative routes with regard to cost, construction, engineering, right-of-way (ROW) maintenance issues, and constraints. Burns & McDonnell and Garland solicited information and comments from a variety of local offices and officials with interest in the Garland Project area.
- 176. Land use throughout the study area is dominated by timberland and oil and gas production, with some smaller areas for pastureland. The pastureland is fairly evenly dispersed throughout the study area, except for the area along the Sabine River, which is mostly forested. The developed land is found around the various towns in the study area,

but there is also scattered residential development thought the study area. The largest percentage (74%) of the land found in the study area is forested land.

- 177. Construction of the Garland Project is not anticipated to have any significant adverse effects on the physiographic or geologic features and resources in the area.
- 178. Construction and operation of the transmission line would not result in any significant impacts to the existing physiography, surface water features, groundwater and aquifers.
- 179. Construction and operation of the transmission line could result in some temporary adverse impacts to wildlife, primarily from the removal of large trees within or near the proposed Garland Project that could provide feeding, shelter, or nesting habitat for some species.
- 180. Impacts to most species would be temporary and short-term during construction and would consist primarily of displacement and disturbance.
- 181. Any potential impact to topography would be minimal and temporary in nature and would be from the use of heavy construction equipment and excavation required for the construction of new foundations and support structures.
- 182. The Garland Project would result in temporary, minor impacts to the soils within the ROWs during construction activities.
- 183. No significant long-term impacts to soils are anticipated along any of the proposed routes.
- 184. Upon approval of a final route by the Commission, Garland and Rusk will conduct detailed environmental surveys along the proposed transmission line to identify any potential wildlife, water, or vegetation concerns and develop management measures to minimize adverse impacts.
- 185. Garland and Rusk will obtain permits and coordinate with the federal, local, and state agencies when appropriate.

Engineering Constraints

- 186. Garland and Rusk proposed using self-supporting tubular steel monopole structures for the Garland Project. Depending on the selected route, the Garland Project could require tangent, double-circuit deadend, and single-circuit deadend structures. Lattice structures could be used in some places.
- 187. Design criteria will be in compliance with applicable statues, the appropriate edition of the National Electrical Safety Code, and acceptable engineering design practice.

- 188. No long-term impacts are anticipated to the transportation system of the study area due to the construction of the proposed Garland Project. Short-term impacts may occur during construction, which could result in a temporary disruption of traffic service.
- 189. The proposed routes all cross 2 state or federal highways and between 24 and 30 other public roads. Routes RP28 (Central) and RP82 (Southern) cross the fewest other public roads (24 each).
- 190. Route RP9 crosses 2 state or federal highways and 26 other public roads.
- 191. Two of the Northern routes (RP16 and RP93) are within 20,000 feet of the Panola County-Sharpe Field, which is an FAA-registered airport with a runway greater than 3,200 feet in length.
- 192. No proposed routes are within 10,000 feet of any FAA-registered airstrips or airports with runways less than 3,200 feet in length.
- 193. One new private airstrip (Hilltop Springs Airport) was identified within 10,000 feet of the centerline of Routes RP5, RP8, and RP16 (Northern); RP10, RP28, RP41 (Central); and RP50, RP53, and RP82 (Southern).
- 194. No heliports were identified within 5,000 feet of any proposed route.
- 195. FAA notification will not be required for any airstrip as a result of the Garland Project. The proposed routes in proximity of a private airstrip are approximately 4,400 feet away (and lower in elevation), and the proposed routes are not anticipated to impact the airstrip, using a 20:1 approach slope.
- 196. Route RP9 is not within 10,000 feet of any FAA-registered airstrips or airports with runways less than 3,200 feet in length or within 5,000 feet of a heliport.

<u>Costs</u>

- 197. Garland's estimated cost includes the costs of engineering, acquiring ROWs, procurement of materials and supplies, construction labor and transportation, and administration. The total estimated cost for the Garland Project ranges from approximately \$103.8 million to \$109.9 million, depending on the route selected. These costs are only estimates as of the time of the filing of the application. Once the final route has been approved by the Commission, Garland will survey the approved line route and final engineering design will be performed. After the final engineering design is completed, costs to construct the approved route will then be re-estimated based on material and construction bids.
- 198. The estimated cost of Route RP9 is approximately \$109 million.