Infra Associates

High Desert Corridor Transmission Analysis

Prepared By

Infra Associates

INFRA ASSOCIATES

Contents

Contents

Introduction

This study is solely based upon the available studies, reports, transmission plans and generic engineering construction cost information to assess the feasibility of building a new transmission line within the existing planned High Desert Corridor (HDC). The HDC is planned to extend from the Antelope Valley Freeway (Hwy 14) in the Antelope Valley to Hwy 18 near the Lucerne Valley.

HDC transmission could not only assist in delivering green energy from the Tehachapi Renewable wind generation area to the load center, it also could add an element to a larger expansion of the grid within the southwest and provide additional reliability throughout Southern California.

However, electric transmission development is complex, and the ability to find a sponsor for a new transmission and successfully integrate and operate that line as part of the high voltage grid is dependent on many factors. Further planning and coordination will be required in order to demonstrate a critical need and identify sources of support for a new transmission line along the HDC right of way.

Many drivers for new transmission infrastructure carry significant uncertainty, and thus grid owners and regulators are generally risk-averse regarding adding new lines. These uncertainties include the unknown mix and location of new electric generation, the potential shut down of gas fired LA basin electric generation, the impact of aggressive energy efficiency programs on load growth, the contribution of new distributed loads and resources such electric vehicles and as rooftop solar installations, and possible legislative and policy mandates setting aggressive renewable energy targets.

Some of these uncertainties will resolve as time goes on. The economics for new transmission in the HDC area could turn positive. In addition, if more aggressive California renewable energy requirements legislation passes more transmission will be needed. (See summary of SB-100 below.) It is strongly recommended that during the planning phases of the HDC transportation corridor, careful thought is given toward development of a transmission corridor in the future.

The Need for New Electric Transmission in Southern California

The Southern California high voltage electric grid in proximity to the HDC is operated largely by the California Independent System operator (CAISO), Southern California Edison (SCE) and the LA Department of Water and Power (LADWP). Any decision to expand the grid by building new transmission would require support from these key entities.

Other parties can and do own transmission assets in the area include merchant generators and the members of the Southern California Public Power Agency (SCAPPA). Under certain circumstances those entities can also play a role in expanding the grid.

Grid planning engineers at LADWP, SCE and the CAISO do annual grid studies and assessments based on forecast of loads and resources 10 years into the future. Those annual studies can reveal economic, reliability, public policy or generation interconnection needs. Once a need is identified, detailed power flow or production simulation models are used to find the best solution among competing new transmission lines or transmission upgrades.

The transmission owners and operators coordinate as necessary when contemplating new additions to the grid since a new transmission line is likely to effect lines owned by others.

New transmission lines are built to meet either a reliability need, economic need or both. Reliability and economic needs can occur as new electric loads take more power off the grid and/or the sources of power injected on to the grid change in amount or geographic location. The resultant power flows on the grid can create congestion or violations or reliability requirements.

Utilities must meet certain grid reliability standards which are set by the Federal Energy Regulatory Commission (FERC), the National Electric Reliability Council (NERC) and State regulators. Individual utilities may have additional requirements aimed at assuring grid reliability and uninterrupted service to customers. When studies show expected new loads and resources will cause the existing grid to be inadequate compared to grid standards, new transmission is required.

In recent years the CAISO has identified a new category of transmission line called "public policy transmission lines". This designation allows the CAISO to assist the state of California in meeting its renewable energy and greenhouse gas reduction goals. While the CAISO continues to monitor the need for new public policy transmission lines, the CAISO believes it has already approved sufficient transmission to meet the 33% renewable goals and in future planning cycles will look at potential transmission needs to meet 50% RPS by 2030. See page 5 of the CAISO 2016-17 Transmission Planning Process, which is included as an appendix to this report.

When a new large generation source is planned, such as a new utility scale solar project, it can give rise to a special class of transmission know at a "generation tie" line. The function of a "gen-tie" line is to bring the new power to the existing grid where it can be distributed broadly to meet customer requirements.

Finding Best Transmission Solutions

Once a need for transmission improvement is identified, planning engineers will assess potential solutions. Those solutions could involve building new transmission, upgrading (reconductoring) existing transmission lines or employing grid flow control devices to push power away from overloaded lines and/ or pull power to underutilized lines in the area. Sometimes non-transmission solutions can be the best way to meet a need. Non-transmission solutions can involve aggressive energy efficiency programs or even curtailing non-essential loads or resources during hours when the transmission system is overloaded.

The planners attempt to find least cost and best fit solutions. If a new transmission line need is identified in the HDC corridor, that new line must compete with other potential solutions which could be lower cost, such as reconductoring a nearby line.

Detailed planning studies are beyond the scope of the report. However, by looking at recent studies completed by the CAISO, LADWP and SCE we can get a high-level feel for the need for transmission in the transmission planning area where the HDC is located.

CAISO 2016-2017 Transmission Planning Process (TPP)

The CAISO conducts an annual Transmission Planning Process to assess the adequacy of the portion of the California grid which is under the operational control of the CAISO (approximately 70% of California's transmission grid). In this process the CAISO coordinates with member transmission owners (SCE, SDG&E, PG&E) and other California grid owners and operators.

The CAISO 2016-2017 transmission plan provides a comprehensive evaluation of the ISO transmission grid to identify upgrades needed to successfully meet California's policy goals, in addition to examining conventional grid reliability requirements and projects that can bring economic benefits to consumers. The plan is updated annually and is prepared in the larger context of supporting important energy and environmental policies while maintaining reliability through a resilient electric system.

The link below provides the completed 2016-2017 TPP:

http://www.caiso.com/planning/Pages/TransmissionPlanning/2016-2017TransmissionPlanningProcess.aspx

Generally, any CAISO references to transmission planning will be based upon the 2016-2017 TPP since it is a completed annual plan. The 2017-2018 transmission planning process has an accepted study plan completed in April 2017. Stakeholder meetings have occurred as recently as November 16, 2017 and final study results are due at the end of January 2018. The time frame for participating transmission owners (PTO) to submit transmission reliability projects to the CAISO is no later than September 15, 2017. Following this timeline, any submission for consideration of a new transmission line along the HDC would have to be added to the study queue during the 2018-19 TPP planning window.

The 2017-2018 transmission planning process schedule is as follows:

Phase	No	Due Date	2017-2018 Activity
Phase 1	1	December 21, 2016	The ISO sends a letter to neighboring balancing authorities, sub-regional, regional planning groups requesting planning data and related information to be considered in the development of the Study Plan and the ISO issues a market notice announcing a thirty-day comment period requesting demand response assumptions and generation or other non-transmission alternatives to be considered in the Unified Planning Assumptions.
	2	January 21, 2017	PTO's, neighboring balancing authorities, regional/sub-regional planning groups and stakeholders provide ISO the information requested No.1 above.
	3	February 21, 2017	The ISO develops the draft Study Plan and posts it on its website
	4	February 28, 2017	The ISO hosts public stakeholder meeting #1 to discuss the contents in the Study Plan with stakeholders
	5	February 28 - March 14, 2017	Comment period for stakeholders to submit comments on the public stakeholder meeting #1 material and for interested parties to submit Economic Planning Study Requests to the ISO
	6	March 31, 2017	The ISO specifies a provisional list of high priority economic planning studies, finalizes the Study Plan and posts it on the public website
	7	Q1	ISO Initiates the development of the Conceptual Statewide Plan
Phase 2	8	August 15, 2017	The ISO posts preliminary reliability study results and mitigation solutions
	9	August 15, 2017	Request Window opens
	10	September 15, 2017	PTO's submit reliability projects to the ISO
	11	September/October	ISO posts the Conceptual Statewide Plan on its website and issues a market notice announcing the posting
	12	September 26-27, 2017	The ISO hosts public stakeholder meeting #2 to discuss the reliability study results, PTO's reliability projects, and the Conceptual Statewide Plan with stakeholders

Phase	No	Due Date	2017-2018 Activity
Phase 3	26[2]	April 1, 2018	If applicable, the ISO will initiate the process to solicit proposals to finance, construct, and own elements identified in the Transmission Plan eligible for competitive solicitation

Phase	No	Due Date	2017-2018 Activity
	13	September 27 – October 11, 2017	Comment period for stakeholders to submit comments on the public stakeholder meeting #2 material[1]
	14	October 15, 2017	Request Window closes
	15	October/November	Stakeholders have a 20 day period to submit comments on the Conceptual Statewide Plan in the next calendar month after posting conceptual statewide plan
	16	October 31, 2017	ISO post final reliability study results
	17	November 14, 2017	The ISO posts the preliminary assessment of the policy driven & economic planning study results and the projects recommended as being needed that are less than $50 million.
	18	November 16, 2017	The ISO hosts public stakeholder meeting #3 to present the preliminary assessment of the policy driven & economic planning study results and brief stakeholders on the projects recommended as being needed that are less than $50 million.
	19	November 16 – November 30, 2017	Comment period for stakeholders to submit comments on the public stakeholder meeting #3 material
	20	December 13 – 14, 2017	The ISO to brief the Board of Governors of projects less than $50 million to be approved by ISO Executive
	21	January 31, 2018	The ISO posts the draft Transmission Plan on the public website
	22	February 2018	The ISO hosts public stakeholder meeting #4 to discuss the transmission project approval recommendations, identified transmission elements, and the content of the Transmission Plan
	23	Approximately three weeks following the public stakeholder meeting #4	Comment period for stakeholders to submit comments on the public stakeholder meeting #4 material
	24	March 2018	The ISO finalizes the Transmission Plan and presents it to the ISO Board of Governors for approval
	25	End of March, 2018	ISO posts the Final Board-approved Transmission Plan on its site

As part of the annual TPP, the CAISO breaks California down into many regions, however the focus is on PG&E, SCE and SDG&E. For the HDC report, the focus will be on the "North of Lugo" and "East of Lugo" areas as identified in the map below since these are the planning areas relevant to the HDC.

In its 2016-17 TPP the CAISO found for the North of Lugo area that no new transmission or transmission upgrades are needed at this time.

The CAISO found for East of Lugo area upgrades are needed to reduce congestion and maintain reliability. The CAISO found the best solution involve the installation of series capacitors (flow control devices) on the 500 KV Lugo – Victorville line.

Both SCE and LADWP benefit from those upgrades and are coordinating to share the costs.

These solutions do not require a new transmission line as they are far less expensive than a new line.

CAISO Transmission Planning Study Areas:

Interconnection

When evaluating a transmission line, it is first important to understand the interconnection point(s) of the transmission line itself. Transmission lines are used to transmit electricity from substation to substation. The substation transforms the voltage to a level that is optimum for the distance travelled. The reason behind this is that the higher the voltage the less lines losses occurred over the line itself. Generators want to limit line losses as they directly reduce the amount of generation that can be used (consumed) at the user end. Because generators are often some distance away from the end user, transmission lines are vital in getting generation to the consumer. Transmission lines are not just for bringing generation to the consumer, they are also used to mitigate congestion and increase reliability. Direction of electron flow (power) within a transmission line depends on resistance. In order to evaluate a transmission line, it is vital to consider the interconnection points of the transmission line itself. There must be an open bay (interconnection point) available for each end and each circuit (for double circuit lines) of any given transmission line. Moreover, there must be availability to expand to existing substations and/or build new substations. Even in cases where expansion may seem to be a most cost-effective solution, such expansion may be limited due to availability of land, funding, and other factors. Below are some possible interconnection points for the HDC transmission line:

A. <u>Lugo Substation</u>

Lugo is one of Southern California Edison's (SCE) key bulk substations.

B. <u>Adelanto Substation</u>

Adelanto is one of Los Angeles Department of Water & Power's (LADWP) bulk substations and solar field.

C. <u>Victorville Substation</u>

Victorville is one of Los Angeles Department of Water & Power's (LADWP) bulk substations and solar field.

D. <u>Desert View Substation (Future)</u>

This project was submitted to the CPUC and on May 21, 2015 was denied by the CPUC. The approximate location of this substation was 5.4 miles southeast of the Apple Valley area at coordinates (34.26.36.46 N, 117.07.12.92 W) with an elevation of 3231 feet above sea level. HDC could help resurrect the need for this substation as it was planned only approximately 4.2 miles from the planned end of the HDC near highway 18. This would be the most logical interconnection point but also faces an uphill battle in trying to get a transmission line and substation built in parallel.

E. <u>Antelope Solar Substation (Interconnection Hwy 14)</u>

Antelope Solar Substation is a smaller interconnection substation located on the southwest corner of the Antelope Valley Solar farm.

F. <u>Apple Valley Substation (Interconnection Hwy 18)</u>

Apple Valley Substation is a smaller load growth substation.

G. Lucerne Substation

Lucerne Substation is a smaller interconnection substation located on the southwest corner of the unincorporated area of Lucerne Valley.

H. Calcite Substation (Future)

This project was formerly known as the Jasper Substation and is being built to connect NextEra and Aurora's solar generation projects to the SCE grid. Construction is not set to start until late 2018 with a commercial operation date of 2020. Calcite Substation a 220kV interconnection substation located approximately 6 miles north of the Lucerne Valley just west of Hwy 247. This station dissects the Lugo-Pisgah 220kV line(s). This station poses a possible solution as the area is unincorporated and could be a viable option for load growth.

However, the Calcite project has significant opposition as residents in the area see this project as the potential to resurrect the Coolwater-Lugo transmission line. The outcome of the Calcite location is still unknown due to opposition.

I. Victor Substation

Victor Substation is one of SCE's key bulk substations as it is the major tie between Lugo and Kramer, the other two major bulk stations in the area.

Transmission/Substation Conflicts

As mentioned previously a transmission line must interconnect from substation to substation. Due to congestion in the North of Lugo area, there are many other competing factors for bulk electrical power. As such there will be significant obstacles to a new HDC transmission line. These obstacles may be related to environmental, public, and/or costs-related factors-r. For this report, we will solely focus on existing electrical facilities as the potential conflicts to the HDC transmission line. The following is a list of projects that have been proposed, have already been approved and built (CAISO and/or CPUC), or have been denied and could be resurrected to support future load growth. These proposed transmission and/or substation facilities could have a direct conflict and/or contributing factor with the HDC transmission capabilities:

Tehachapi Renewable Transmission Project (TRTP)

The Tehachapi Renewable Transmission Project is a project involving the construction of approximately 173 miles of new and upgraded high-voltage transmission lines for transmission of electricity from wind farms and other generating units in southeastern Kern County, California to Los Angeles County and San Bernardino County. The project, developed and operated by SCE, commenced construction on March 7, 2008 and was completed and placed in operation in December 2016. It passes through sections of the Tehachapi Mountains, Sierra Pelona Mountains, and Antelope Valley.

TRTP was both a blessing and a curse as it brought more than 4500 MW of renewable energy into the LA basin, however it also brought in heartache and a lot of upset rate payers. Specifically, there was a considerable amount of bad press that came with the Chino Hills portion in which transmission towers were erected and then removed in order to install very expensive 500kV underground lines. This cost SCE a lot of money with some significant bad press.

Because the first leg of the HDC starts in the Antelope Valley and the valley was highly impacted by the TRTP, additional transmission here is going to be a cause for some additional public outreach and public impact.

Kramer-Lugo Transmission Line Crossing 1 & 2

Building new transmission lines which cross across existing transmission lines is always a problem. From top to bottom voltage levels dictate elevation. Therefore, depending on the voltage level of the proposed HDC line, it is likely that at minimum 4 structures would need to get modified on the Kramer-Lugo 1 & 2 lines on both sides of the proposed HDC line.

Victor-Gale Transmission Line Crossing 1 & 2

Building new transmission lines which cross across existing transmission lines is always a problem. From top to bottom voltage levels dictate elevation. Therefore, depending on the voltage level of the proposed HDC line, it is likely that at minimum 4 structures would need to get modified on the Victor-Gale line on both sides of the proposed HDC line.

500kV DC Feeder

Building new transmission lines which cross across existing transmission lines is always a problem. From top to bottom voltage levels dictate elevation. Therefore, depending on the voltage level of the proposed HDC line, it is likely that underground transmission would be required here since utilities (such as SCE and LADWP) and the CAISO are particularly apprehensive about any work on or around the 500kV DC feeder line which originates in Utah and moves through Las Vegas and into Los Angeles. This underground is going to get very costly as seen in the TRTP in Chino Hills, CA.

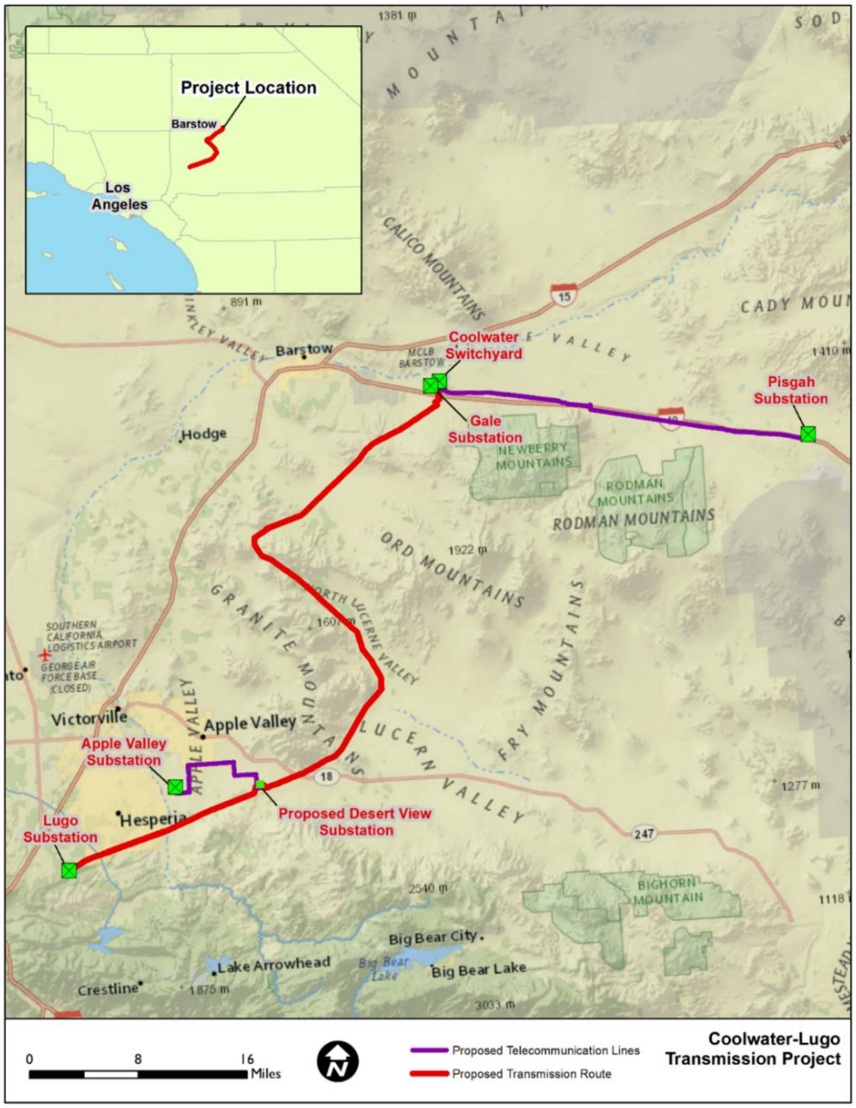
Coolwater-Lugo Transmission Line (dismissed by the CPUC in 2015)

The Coolwater-Lugo project (formerly known as south of Kramer) is a transmission line connecting at a new bay location at Lugo Substation located in Hesperia, meandering a 220kV transmission line approximately 65-75 miles through the Jasper Substation (new project in Lucerne Valley) to a new bay position at the Coolwater Substation in Daggett.

The project was proposed in 2011 and in May 21, 2015 the CPUC voted to dismiss the Coolwater-Lugo project without prejudice.

This is a critical motion as this line was rejected primarily due to public opposition within the high desert area. Because the HDC transmission line would be in a similar area the case for transmission will need to be strong. It is extremely important to identify why the Coolwater-Lugo line was rejected so that future projects might avoid this similar path.

A map of the proposed Coolwater-Lugo project is below to get a reference to the HDC transmission project.



A. Sub-transmission & Distribution Crossings

In addition to transmission crossings, there are also many 69kV and 12kV feeder crossings. The HDC would likely be at minimum a 115kV line if not 220kV. (Note: Although the industry standard label is 230kV, SCE generally uses the label of 220kV). Every line crossing would need to be evaluated to ensure there was adequate clearance above all 69kV and 12kV feeder lines. This would likely entail increasing the height of the proposed transmission structures which drives up the costs.

B. Lugo-Pisgah Transmission Line Crossing 1 & 2

Building new transmission lines which cross across existing transmission lines is always a problem. From top to bottom voltage levels dictate elevation. Therefore, depending on the voltage level of the proposed HDC line, it is likely that at minimum 4 structures would need to get modified on the Lugo-Pisgah lines on both sides of the proposed HDC line.

Public Opposition

As with any infrastructure projects there is always going to be public opposition to removing natural landscape and replacing it with steel and concrete. The high desert of California is no stranger to public opposition. Residents of San Bernardino County (the largest County in the US in terms of land size) have fought against SCE, developers, CAISO and the CPUC many times. Such efforts were able to successfully block SCE's Coolwater-Lugo transmission line in 2015 and may be looking to block the Calcite Substation as well.

Significant thought and planning will need to go into any infrastructure project and especially transmission and substation projects as activists in San Bernardino County are experienced with this type of endeavor. To proactively understand public concerns, outreach is suggested to groups including but not limited to the following:

- The Alliance for Desert Preservation
- The Morongo Basin Conservation Association
- Mojave Communities Conservation Collaborative
- Lucerne Valley Municipal Advisory Committee
- Johnson Valley Municipal Advisory Committee

Transmission and Interconnection Costs

In October 2017, the ISO will publish the list of generator interconnection network upgrades that meet at least one of the following criteria:

1. Consists of new transmission lines 200kV or above and have capital costs of $100 million or more;
2. Is a new 500kV substation that has capital costs of $100 million or more;
3. Has a capital cost of $200 million or more.

As of the draft of this report, that list has not yet been published. However, without any progress on the HDC Transmission Plan, it would still be several years out before the HDC could show up on the TPP Network Upgrade list.

It is important to understand high level costs of any project prior to deciding to move forward. Below are the approximate costs associated with the HDC transmission component.

1. Interconnection costs associated with Generation Interconnection Process Reform (GIPR) - ~$1 million

2. Project engineering, material, equipment and labor to construct the following facilities. These costs do not include land acquisition, permitting, litigation, mediation, environmental impacts or public outreach/involvement. These factors can double or even triple the costs below depending on the complexities. In some cases, public opposition and/or environmental impacts can completely shut a project down.
3. Costs:
    a. Assumed western interconnection substation work
        i. Expanding a 220kV bus at the western end of the HDC transmission line via an existing substation to include civil, mechanical and electrical ~ $22 million
    b. Assumed eastern interconnection substation work
    c. Expanding a 220kV bus at the western end of the HDC transmission line via an existing substation to include civil, mechanical and electrical ~ $22 million; or;
    d. Developing a new 220kV substation at the eastern end of the HDC transmission line to include civil, mechanical and electrical ~ $42 million (not in cost table)
    e. Approximately 65 miles of double circuit monopole 220kV transmission through a new ROW ~ $65 million (roughly $1 million per mile)
    f. Underground transmission work to deal around the 500kV DC feeder line near Victorville ~ 1 mile at roughly $20 million.

Transmission Costs Breakdown:

Cost Description	Cost	Timeline	
CAISO GIPR Process	~$1MM	2 years	
Land Acquisition	NOT INCLUDED	~ 1 year	*
Permitting	NOT INCLUDED	~ 1 year	*
Environmental	NOT INCLUDED	~ 1 year	*
Public Outreach	NOT INCLUDED	~ 1 Year	*
Substation Engineering	~$4MM	~ 1 year	*
Transmission Engineering	~$8MM	~ 1 year	*
Substation Procurement	~$20MM	~ 1 year	*
Transmission Procurement	~$30MM	~ 1 year	*
Substation Construction	~$20MM	~ 1 year	
Transmission Construction	~$31MM	~ 1 year	
Underground Transmission	~$20MM	~ 1 year	
	~$134MM	**~ 6 years**	

*Process can be done in parallel with other processes

Existing Queue Generator Projects

Additional projects within the CAISO GIPR queue could trigger network upgrades that could either benefit or hinder the HDC Transmission project. These are the existing projects in the queue planning to interconnect to the North of Lugo area. These projects might drive upgrades that HDC could take advantage of in order to reduce overall projects costs by sharing the network upgrade costs with other generation projects within the queue. One or many of these projects might also take existing open bay positions and/or drive the need for follow-up network upgrades not previously identified. As of October 2017, the following projects are currently in the GIPR queue with interconnection identified within the North of Lugo area:

INFRA ASSOCIATES

California ISO

The California ISO Controlled Grid Generation Queue - CISO Active

			Location	Point of Interconnection	
Queue Position	**Queue Date**	**Application Status**	**County**	**Station or Transmission Line**	**Proposed On-line Date (as filed with IR)**
1305	5/2/2016	ACTIVE	SAN BERNARDINO	Calcite 230 kV Line	8/1/2020
1312	5/2/2016	ACTIVE	SAN BERNARDINO	Coolwater Substation 115kV	6/30/2020
1207	4/30/2015	ACTIVE	SAN BERNARDINO	Jasper 230kV substation	6/1/2020
552	2/1/2010	ACTIVE	SAN BERNARDINO	Jasper Sub	3/1/2012
897	4/2/2012	ACTIVE	SAN BERNARDINO	Jasper Substation 220kV bus	12/1/2016
1206	4/30/2015	ACTIVE	SAN BERNARDINO	Jasper Substation 230kV	12/31/2018
1307	5/2/2016	ACTIVE	SAN BERNARDINO	KRAMER 230 KV SUB	12/31/2020
1204	4/30/2015	ACTIVE	SAN BERNARDINO	Kramer Substation 230kV	6/1/2020
1313	5/2/2016	ACTIVE	SAN BERNARDINO	Kramer Substation 230kV	6/30/2020
1314	5/2/2016	ACTIVE	SAN BERNARDINO	Kramer Substation 230kV	6/30/2020
1413	5/1/2017	ACTIVE	SAN BERNARDINO	Roadway Substation 115kV bus	12/31/2020
1407	5/1/2017	ACTIVE	SAN BERNARDINO	San Bernardino Substation 230kV	3/1/2019
1308	5/2/2016	ACTIVE	SAN BERNARDINO	SCE Coolwater Substation 115kV	7/1/2019
1414	5/1/2017	ACTIVE	SAN BERNARDINO	Victor Substation 230kV	12/29/2019

Next Steps

This survey of transmission facilities and needs in the HDC area has shown that there is potential for successful co-location of High Speed Rail and new electric transmission, however the timing will be important and much more early project development work will be needed to verify if the HDC electric transmission component is economic and viable.

A new electric transmission line can take 7 to 10 years from initiation through completion. While construction of the line is likely to take only about 18 months, there will need to be at least 5 years of environmental studies, permitting, public outreach, and land acquisition.

The authors have assumed that the timing and cadence of the High-Speed Rail component of the HDC is the key driver. A more detailed exploration of transmission opportunities will need to be closely coordinated and initiated as soon as High-Speed Rail development activities begin.

For HDC corridor electric transmission development the following is a list of a few of the early activities that will be needed:

- An integrated GANTT chart for high-speed rail and electric transmission development.
- Refresh the review of available published reports on transmission needs in the area
- Refresh and update on key drivers of transmission in the area, especially new power plant additions, shut downs and renewable energy policy.
- Conduct outreach to parties that may be interested in developing new transmission. Contact should be made with Public and Private entities including SCE, LADWP, CAISO, California Energy Commission, electric generation developers in the HDC area and SCPPA members.

It will be also important for the HDC JPA to decide what role it would like to play in the transmission line portion of the project. It appears the HDC will have valuable linear right-of-way, environmental studies, land use maps and other valuable siting and permitting related intellectual property. The HDC JPA must assess whether they will sell or lease those assets to an electric transmission line project developer, envision funding project development, and/or want to be the owner or partial owner of a new transmission line.

The HDC JPA has the chance to fulfill an innovative and exciting opportunity to serve the growing transportation and energy needs of Southern California.

11. Appendices

Appendix 1 - Legislation

Senate Bill 1 – Transportation Funding (SJM recommends moving this SB1 summary to an appendix)

Senate Bill 1 is a landmark transportation investment to rebuild California by fixing neighborhood streets, freeways and bridges in communities across California and targeting funds toward transit congested trade and commute corridor improvements. This bill was approved by Governor Brown on April 28, 2017

SB1 Chapter 8.5 Section 2391 defines the code as:

"Pursuant to subdivision (b) of Section 11053 of the Revenue and Taxation Code, two hundred fifty million dollars ($250,000,000) in the State Highway Account shall be available for appropriation to the Department of Transportation in each annual Budget Act for the Solutions for Congested Corridors Program. Funds made available for the program shall be allocated by the California Transportation Commission to projects designed to achieve a balanced set of transportation, environmental, and community access improvements within highly congested travel corridors throughout the state. Funding shall be available for projects that make specific performance improvements and are part of a comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, and visitors to the area of the corridor while preserving the character of the local community and creating opportunities for neighborhood enhancement projects. In order to mitigate increases in vehicle miles traveled, greenhouse gases, and air pollution, highway lane capacity-increasing projects funded by this program shall be limited to high-occupancy vehicle lanes, managed lanes as defined in Section 14106 of the Government Code, and other non-general-purpose lane improvements primarily designed to improve safety for all modes of travel, such as auxiliary lanes, truck climbing lanes, or dedicated bicycle lanes. Project elements within the corridor plans may include improvements to state highways, local streets and roads, public transit facilities, bicycle and pedestrian facilities, and restoration or preservation work that protects critical local habitat or open space."

SB1 seems like a logical funding mechanism for HDC as it clearly targets "commute corridor improvements".

Senate Bill 100 – California Renewables Portfolio Standard Program

Senate Bill 100 is another landmark bill which could set new more aggressive renewable portfolio standard (RPS) goals in California. This bill, "The 100 Percent Clean Energy Act of 2017" failed in the 2017 legislative session but is expected to reemerge in 2018.

Under existing law, the Public Utilities Commission (PUC) has regulatory authority over public utilities, including electrical corporations, while local publicly owned electric utilities, as defined, are under the direction of their governing boards. The California Renewables Portfolio Standard Program requires the PUC to establish a renewables portfolio standard requiring all retail sellers, as defined, to procure a minimum quantity of electricity products from eligible renewable energy resources, as defined, so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 25% of retail sales by December 31, 2016, 33% by December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. The program additionally requires each local publicly owned electric utility, as defined, to procure a minimum quantity of electricity products from eligible renewable energy resources to achieve the procurement requirements established by the program. The Legislature has found and declared that its intent in implementing the program is to attain, among other targets for sale of eligible renewable resources, the target of 50% of total retail sales of electricity by December 31, 2030.

The key takeaways from SB100 are the existing requirements could be increased to 100%, but here is what is in place now:

- 25% of Retail Energy Sales must be of Renewable Sources by December 31, 2016 – ACHIEVED
- 33% of Retail Energy Sales must be of Renewable Sources by December 31, 2020 – TRACKING
- 40% of Retail Energy Sales must be of Renewable Sources by December 31, 2024
- 45% of Retail Energy Sales must be of Renewable Sources by December 31, 2027
- 50% of Retail Energy Sales must be of Renewable Sources by December 31, 2030

Any transmission interconnecting renewable resources and pulling them toward critical load would clearly impact SB100 in a positive way.

Ballot Measure M – LA County Traffic Improvement Plan

Measure M was approved by the voters of Los Angeles County on November 8, 2016 to improve transpo rtation and ease traffic congestion consistent with the Measure M Ordinance #16-01.

Metro staff developed a Selection Process to address the Measure M Ordinance requirements for the In dependent Taxpayer Oversight Committee, comprised of seven voting members representing the followi ng areas of expertise:

A. A retired federal or state judge.

B. A professional from the field of municipal/public finance and/or budgeting with a minimum of ten (10) years of relevant experience.

C. A transit professional with a minimum of ten (10) years of experience in senior-level decision making in transit operations and labor practices.

D. A professional with a minimum of ten (10) years of experience in management and administration of financial policies, performance measurements, and reviews.

E. A professional with demonstrated experience of ten (10) years or more in the management of large-scale construction projects.

F. A licensed architect or engineer with appropriate credentials in the field of transportation project desi gn or construction and a minimum of ten (10) years of relevant experience.

G. A regional association of businesses representative with at least ten (10) years of senior level decision making experience in the private sector.

These seven individuals are solely looking at the transportation elements of Measure M and not the overall energy sustainability of the Measure as shown through their website:

http://theplan.metro.net/

Specifically Measure M spells out the goal for the HDC as:

34. High Desert Multi-Purpose Corridor: SR-14 to SR-18

Builds the Los Angeles County portion of a new freeway and toll lanes with parallel rail/transit service and a bikeway to connect cities in the Antelope and Victor Valleys, including Palmdale and Lancaster.

A. Issues with Measure M

There are no discussions mentioned about transmission or solar.

a. Measure M has no representative addressing the viability of transmission within the HDC.
b. Measure M has no representative addressing the viability of solar within the HDC.
c. Without these critical seats at the table it is likely that the requirements to truly address transmission and the associated transmission interconnection into the energy congested Lancaster-Victorville area. Tehachapi Renewable Transmission Project (TRTP) has already consumed a lot of the viable resources in this area.
d. Understanding the infrastructure takes time to build in California, it is critical that the energy component be addressed in parallel with the transportation effort or it will get overlooked and possibly get overlooked.