




City Council

**Item #9: Informational Report
Regarding Route Analysis for
115kV Transmission Line**
RTC 24-1614


March 19, 2024

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**115kV Transmission Line
Northern to Kifer Receiving Station**

- **Project Scope:** Construct a new 115kV overhead transmission line of approximately 2.24 miles between Northern Receiving Station and Kifer Receiving Station.
- Needed to accommodate approved and under construction load growth and reliability
 - Transfer additional power from new HVDC line (At NRS) and redistribute loads
 - System Operating Limit will be limited to ~819MW if transmission line is not constructed
 - Key Items: constructability, existing utilities, power delivery, potential growth, aesthetics, tree removals, maintenance considerations, construction costs, and schedule
- Informational report only – no decisions today



LEGEND
 Route A
 Route B
 Route C



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Schedule

Task	Timeframe
Planning	Jul. 2021 – Jul. 2022
Call for Proposals	Jul. 2022 – Jan. 2023
Design	Oct. 2022 – Nov. 2026
Easement Acquisition	Jan. 2024 – May 2026
CEQA	Jan. 2024 – Nov. 2024
CEQA Community Outreach	Apr. 2024 – Jun. 2024
Permits	Feb. 2024 – Nov. 2025
Material Procurements	Oct. 2024 – Nov. 2026
Construction Advertising & Awards	May 2026 – Nov. 2026
Construction/Close Out	Nov. 2026 – Mar. 2028

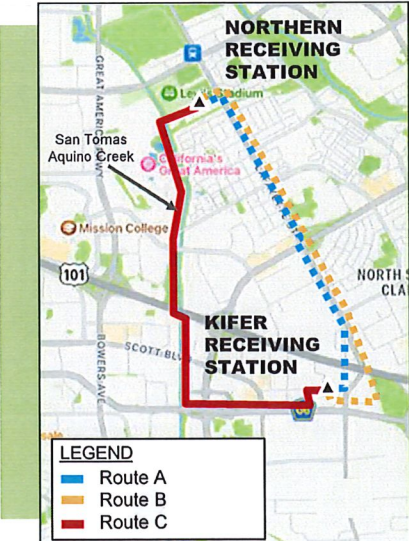
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Routes

Studied Three Routes

- Key consideration – feasibility and schedule (2028 completion date)
- Route C (Not Preferred) - West of San Tomas Aquino Creek
 - Majority within Creek boundaries
 - Replace existing 60kV line where available
 - Easements and permitting - unknown if permits would even be feasible and if feasible would not meet schedule due to extensive permitting schedules
 - Longest alternative




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Routes

- Route B (Not Preferred) – Follows Route A on Lafayette Street until diverging at Bassett and George Street to the UPRR ROW and then crosses several private parcels to KRS.
 - UPRR right of way is too narrow (concerns with induced current on the rail lines and additional permitting and design review)
 - Properties surrounding UPRR do not have sufficient space to place structures
 - Require extensive easement costs and coordination
 - UPRR permits
- Route A (Preferred) – Along Lafayette Street to Bassett Street and Duane Avenue



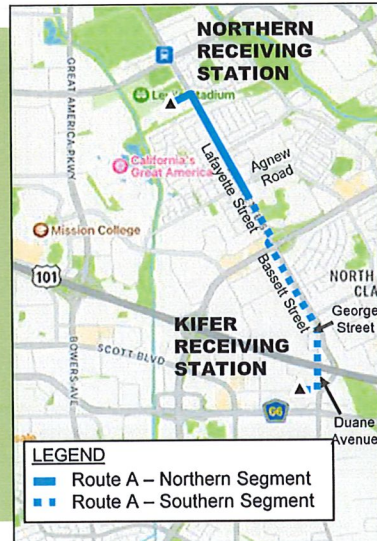
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Preferred Route

Total Route Spans 2.24 miles

- NRS to Agnew (Northern Segment)
 - 0.74 miles
 - Overhead and underground options
 - Lafayette Street
- Agnew to KRS (Southern Segment)
 - 1.5 miles
 - Replaces existing transmission lines where available
 - Lafayette Street, Bassett Street, Duane Avenue




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Preferred Route



Northern Segment (0.74 Miles)

- Center median of Lafayette Street
- No existing overhead transmission
- Residential development on both sides of Lafayette Street
- Studied both underground and overhead



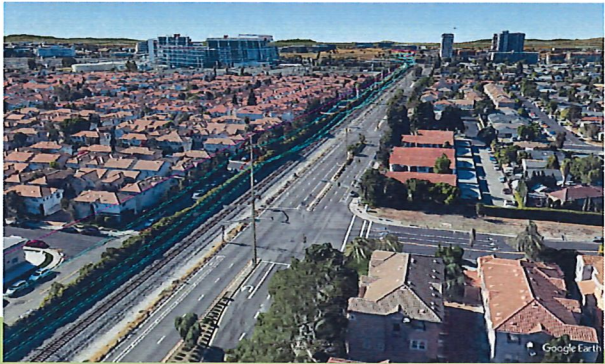
Looking South on Lafayette Street at Hogan Drive

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Overhead Northern Segment

- Nine new poles within median
- Poles spaced every 350 feet on average and ~90-125 feet in height
- Located within existing ROW or easements
- Approximately \$9.5 million
- Minimal utility relocation
- Would minimize landscape/tree removal as part of design
- An overhead transmission line can deliver more power and accommodate future growth with the option for a future underbuilt 60kV or 115kV transmission line



Looking North on Lafayette Street just south of Hope Drive

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Underground Northern Segment

- Constraints with constructability, schedule, power deliverability, and aesthetics
- 25 existing utilities crossing or conflicts with underground alignment in Lafayette
- Requires relocation of 300 feet of two transmission gas mains for PG&E and DVR
 - The DVR shutdown can only occur twice a year
 - PG&E work would be on PG&E schedule – will not meet 2028 date
- Would also need to cross multiple utility lines
 - Could require not meeting minimum spacing requirements or significant excavation up to 20' deep

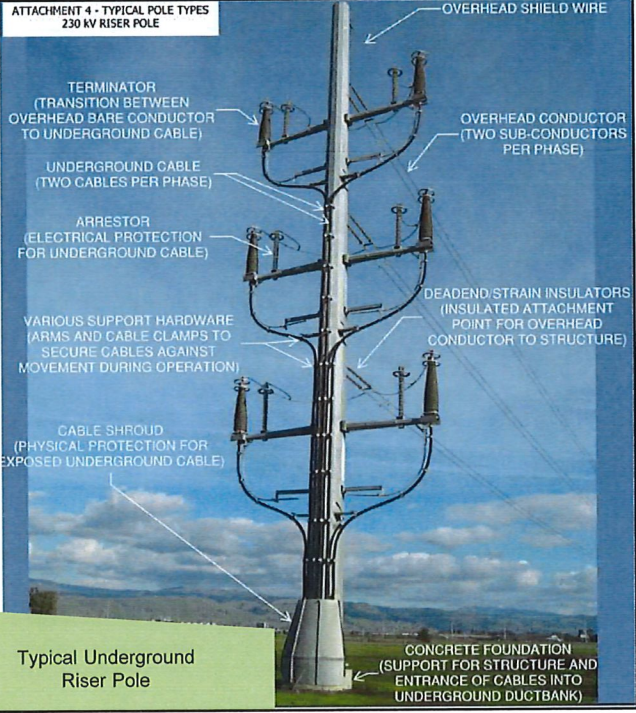
Utility Conflict #	Existing Utility	Quantity/Size	Approximate Location Along Lafayette St.
1	Electric	Ductbank with five 5" conduits and one 4" conduit	South of Agnew Rd.
2	Communication	Unknown* typically one or more pipes, each ranging from 1" to 4"	South of Agnew Rd.
3	Communication	Unknown* typically one or more pipes, each ranging from 1" to 4"	South of Agnew Rd.
4	Natural Gas (PG&E)	12"	South of Agnew Rd.
5	Sanitary Sewer	30"	South of Agnew Rd.
6	Natural Gas (PG&E)	6"	South of Agnew Rd.
7	Water	12"	South of Agnew Rd.
8	Natural Gas (SVP)	12"	South of Agnew Rd.
9	Electric	Ductbank with five 5" conduits and one 4" conduit	South of Agnew Rd.
10	Electric	Ductbank with four 5" conduits and one 4" conduit	North of Agnew Rd.
11	Communication	4"	North of Agnew Rd.
12	Natural Gas (PG&E)	6"-24"*	Between Hope Dr. and Agnew Rd.
13	Sanitary Sewer	8"	Between Hope Dr. and Agnew Rd.
14	Storm Drain	15"	South of Hope Dr.
15	Water	12"	Intersection of Hope Dr.
16	Natural Gas (SVP)	12"	Between Eisenhower Dr. and Hope Dr.
17	Natural Gas - Transmission (PG&E)	6"-24"*	Between Eisenhower Dr. and Hope Dr.
18	Electric	1.5' Streetlight conduit*	South of Eisenhower Dr.
19	Electric	1.5' Streetlight conduit*	Intersection of Eisenhower Dr.
20	Sanitary Sewer	21"	North of Eisenhower Dr.
21	Electric	1.5' Streetlight conduit*	North of Hogan Dr.
22	Sanitary Sewer	15"	Between Fairway Glen Dr. and Hogan Dr.
23	Natural Gas (PG&E)	24"*	Between Fairway Glen Dr. and Hogan Dr.
24	Water	8"	Between Fairway Glen Dr. and Hogan Dr.
25	Natural Gas (SVP)	12"	South of Fairway Glen Dr.

* Utility size is estimated, accurate record information is unavailable.

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Underground Northern Segment

- Power Delivery:
 - Can deliver up to 83% of the power of overhead at 115kV due to heat dissipation requirements.
 - Further declines at the 230kV level to 79.9%.
 - **Underground alternative will limit future load growth and our ability to serve currently entitled customers.**
- Aesthetics:
 - Overhead alignment from NRS to riser pole in median of Lafayette
 - Additional riser pole just south of Agnew on east side of Lafayette
- Approximately \$19M (does not include PG&E costs)



Typical Underground Riser Pole

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Overhead Summary Discussion

- SVP controls the schedule - can meet the 2028 energization date without major gas line relocations or DVR shutdown
- Can accommodate future additional growth
- Can accommodate ~20% more power than the underground alternative for already approved projects
- Pole space provisions for future additional growth along new transmission segments
- 50% less cost for the overhead northern segment compared to the underground alternative
- Ease of maintaining the system/restoration in emergency conditions

Typical Stacked Configuration

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Comparison of Northern Segment

Overhead	Underground
Ability to meet 2028 schedule.	Can not meet 2028 schedule <ul style="list-style-type: none"> Relying on PG&E for utility relocation DVR shut-down
Maximum transmission capacity	Reduced transmission capacity
Ability to accommodate future growth	Lack of provisions for future growth
Reduces construction disruption to the public	Extended construction timelines with extended lane closures and traffic control
Ease of maintaining the system	Longer restoration times in emergency situations
Northern Segment Costs: ~\$9.5 Million Total Project Costs: ~\$36 Million	Northern Segment Costs: ~\$19 Million Total Project Costs: ~\$45.5 Million

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Preferred Route

Southern Segment (1.5 Miles)

- Initial perspective was to continue down the median from Agnew to Montague (2,100 feet)
 - Easier construction, less easements, cost (\$2.15M)
 - Opportunities to accommodate additional future growth
 - Did not recommend for aesthetic reasons
- Two existing 60kV overhead transmission lines
 1. East side of Lafayette Street
 2. West side of Bassett Street



Looking South on Lafayette Street just south of Agnew

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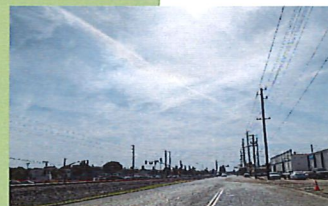
Preferred Route

Southern Segment (1.5 Miles)

- Between Agnew and Montague, existing 60kV on the east side of Lafayette and west side of Bassett would be replaced
- At Montague Expressway, continue on west side of Bassett Street and replace 1,120 feet of 60kV where existing and install 2,980 feet of new overhead
- Final 980 feet of transmission line from just north of Bayshore to KRS along Duane Avenue would replace an existing 60kV transmission line



Looking South on Lafayette Street just south of Agnew





Looking South on Bassett Street just south of Montague



Looking South on Duane Avenue just south of Bayshore

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South Of Agnew Segment

- 1.5 Miles of overhead lines (pole heights 110'-160')
- ~\$4.3M estimated easement costs

From	To	Alignment Consideration	Approximate # of Easements	Poles Installed	Poles Removed
Agnew Road	Montague Expressway	East side of Lafayette and west side of Bassett	4 Non-Residential Easements	7	10
Montague Expressway	Bassett and George Street	West side of Bassett	13 Non-Residential Easements	11	13*
Bassett and George Street	Kifer Receiving Station	East side of Bassett and Duane Street	3 Non-Residential Easements	7	5

*Distribution and transmission

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Next Steps

- Continue development of overhead design drawing package for 230kV primary and 115kV future underbuild along Lafayette and Bassett Streets
- CEQA Community Outreach
- Develop CEQA IS/MND for the project and return to Council in Fall 2024
- Prepare equipment specifications for long lead items (end of 2024, mid-2025, and end of 2025)
- Easement discussion and acquisition
- Construction contract award (Council action Q3, 2026)

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City Council

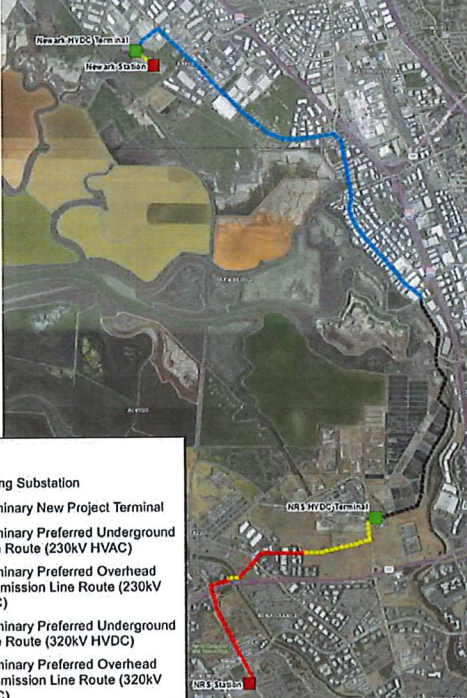
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**CAISO Transmission Line from
PG&E Newark Station to SVP
Northern Receiving Station**

- LS Power Project scope:
 - Two High Voltage Direct Current (HVDC) Terminals,
 - ±320 kV HVDC underground and overhead transmission line between the terminals (preliminary preferred route is ~8 miles)
 - 230 kV interconnection at each station
- Target in-service date by mid 2028
- Monthly Project Coordination Meetings
- Future Interconnection Agreement between LS Power and SVP for Council Action.



Legend

- Existing Substation
- Preliminary New Project Terminal
- Preliminary Preferred Underground Cable Route (230kV HVAC)
- Preliminary Preferred Overhead Transmission Line Route (230kV HVAC)
- Preliminary Preferred Underground Cable Route (320kV HVDC)
- Preliminary Preferred Overhead Transmission Line Route (320kV HVDC)

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