



Port of San Diego Regional Zero Emission Infrastructure for Heavy-Duty Trucks

Feasibility and Market Analysis

August 2024



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Glossary

PoSD	Port of San Diego
SC	Skycharger
BET	Battery Electric Truck
BEV	Battery Electric Vehicle
MCAS	Maritime Clean Air Strategy
ZET	Zero-Emission Truck
LCFS	Low-Carbon Fuel Standard
CEC	California Energy Commission
CARB	California Air Resources Board
SDG&E	San Diego Gas & Electric
PYDFF	Power Your Drive For Fleets
CPUC	California Public Utility Commission
NCMT	National City Marine Terminal

TaaS	Trucking-as-a-Service
CPO	Charge Point Operator
FCEV	Fuel Cell Electric Vehicle
BESS	Battery Electric Storage System
LD / MD / HD	Light-duty / Medium-duty / Heavy-duty
EPC	Engineering, Procurement and Construction
ITC	Investment Tax Credit
ACF	Advanced Clean Fleets
SANDAG	San Diego Association of Governments
CEQA	California Environmental Quality Act
COD	Commercial Operation Date
CCS	Combined Charging System
NACS	North American Charging Standard

Agenda

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01 Executive Summary (1/2)

Responding to a request from its Board of Commissioners, Port of San Diego (PoSD) staff contracted JLL to perform an analysis of Skycharger's (SC) proposal to assess reasonableness of assumptions, identify risks, and provide recommendations to mitigate risks.

Most estimates are in line with market, and assumptions generally appear conservative.

- JLL assessed the main financial, operational and reputational risks to the project, with a major focus on financial risks
- Financial risks are largely related to actual utilization levels, obtaining key incentives to finance the project and unplanned potential costs
 - Overall CAPEX assumptions are in line with market; cost estimates need to be completed and detailed as project design matures
 - No site remediation & interconnection costs are currently modeled, could pose financial & operational risks and delay development if materialized
 - Assumptions based on preliminary design stage. Assessment should be updated when SC provides refined cost estimates at the next design milestones
 - Overall OPEX estimates – the main driver of which is the cost of electricity – is in line with market
 - Project funding & economic performance depends heavily on obtaining various incentives, which appear likely to materialize
 - A \$10M grant plays a key role in funding the project. The CEC officially approved the grant at its August 2024 meeting
 - SC has proactively applied for additional grants which could improve project economics and provide a buffer if some incentives don't materialize as expected
 - No concerns were identified regarding the modeled utility rebate and tax credits
 - If too few incentives materialize, the project will require additional capital, which may result in SC requesting to renegotiate lease terms and capital structure
 - Uncertainty about early years' utilization brings some financial risks, which can be buffered with additional incentives
 - Due to a less mature technology & significant upfront costs, Battery Electric Truck (BET) adoption and charger utilization estimates appear optimistic in the project's early years
 - Driven by regulations, longer-term utilization assumptions are in line with available forecasts, suggesting expected utilization may materialize by early 2030s
 - PoSD's lease consideration is mostly tied to base rent payments; partially insulating PoSD from revenue-related risk (driven by charger utilization)

01 Executive Summary (2/2)

- Operational issues have the potential to create significant risks, which can be mitigated through the inclusion of specific lease provisions
 - Inadequate maintenance & lack of reliability often impact charging infrastructure, requiring clear performance and maintenance standards
 - Uncertainty around SDG&E's available infrastructure capacity may impact project design, construction schedule, operations, and cost
 - Project layout is currently optimized to use as little land as possible, which may lead to maneuverability issues and an inferior customer experience
- Performance of the truck stop presents some reputational risks, which can be mitigated with proactive engagement of local stakeholders
 - Under-utilization of charging assets may convey the image of a project not adapted to the needs of PoSD stakeholders and undermine support for Port's goals
 - PoSD & SC should communicate frequently with nearby communities about the project's role in reducing local air, noise & carbon pollution while also addressing existing concerns about increased truck traffic and fire risk
 - If the project succeeds, PoSD should be prepared to highlight its leadership role in supporting the transition to zero emission trucking
- JLL is ready to assist PoSD as the project moves forward with Term Sheet and Lease negotiations. JLL can support identification of risks and recommend appropriate mitigation measures.

02 Background

- 2021 [Maritime Clean Air Strategy](#) (MCAS), aiming for 40% heavy-duty truck trips to be zero-emission by mid-2026 & 100% by 2030
- PoSD commissioned WSP to prepare a [Heavy-Duty Zero-Emission Truck Transition Plan](#), released in June 2022
- RFI May 23 to July 25, 2022
 - Result: Focused approach on Tidelands site & Battery EVs
- RFP April 24 to August 10, 2023
 - 6 respondents, 4 responses deemed credible, Gage Zero & Skycharger shortlisted
 - Skycharger proposal approved at March 2024 board meeting
- PoSD Board requested a feasibility study and deeper dive of Skycharger's proposal
- Skycharger & PoSD executed the Exclusive Negotiation Agreement on August 15, 2024



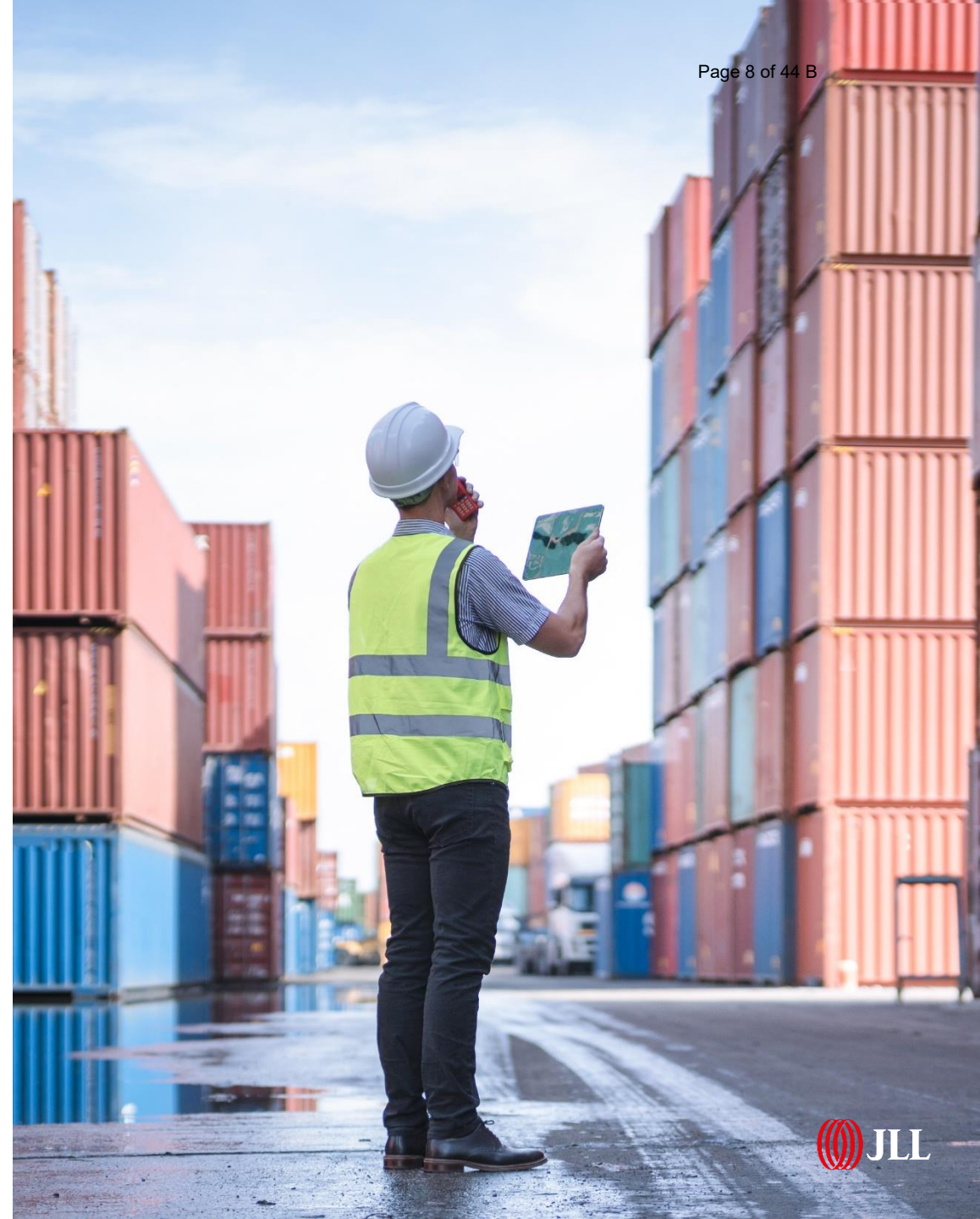
03 Scope of Work

In June 2024, PoSD appointed JLL to conduct a deep dive & stress test of Skycharger business model & core assumptions.

JLL previously supported PoSD with RFI review and its RFP process, including RFP drafting and proposal evaluation.

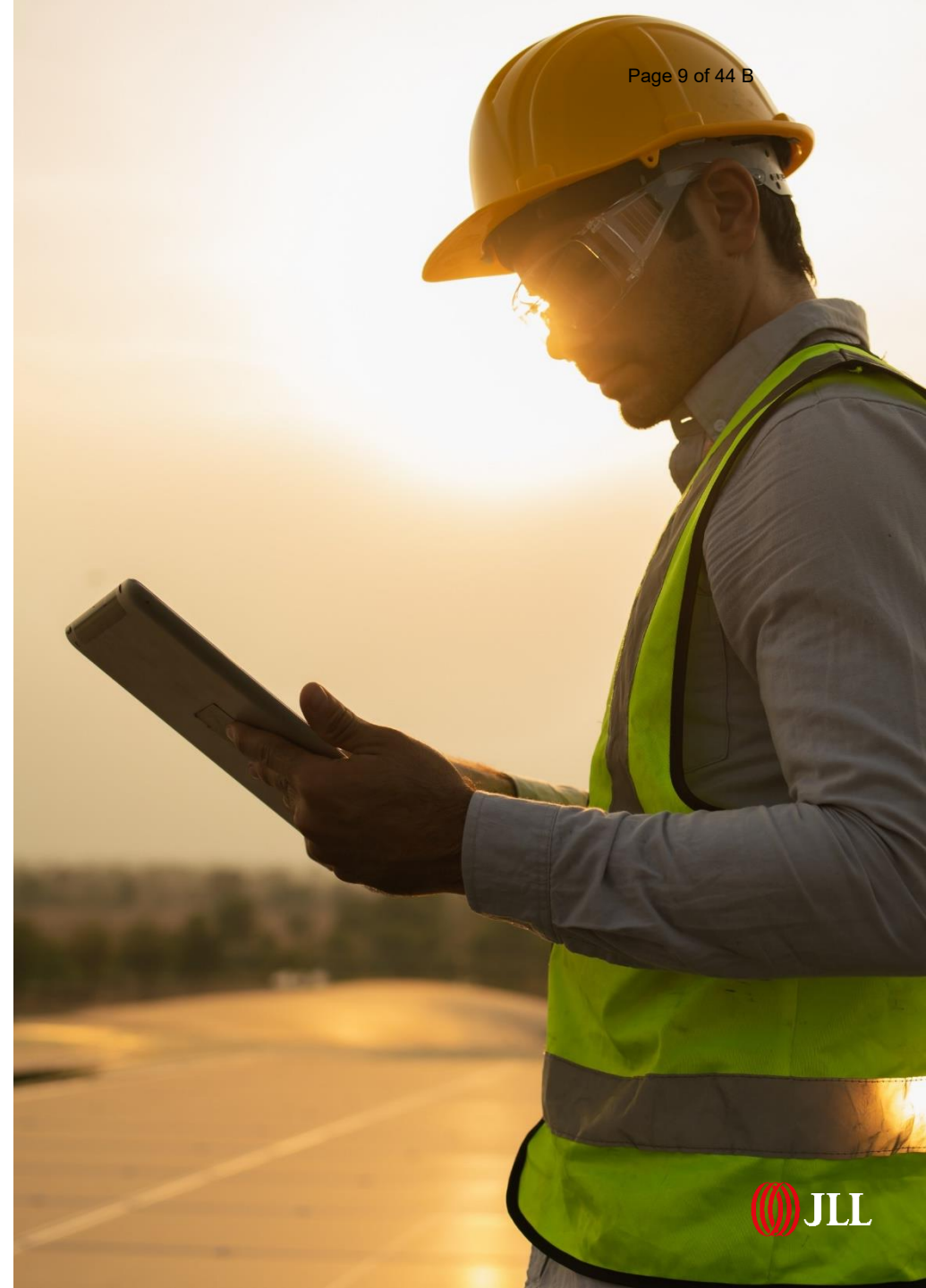
Areas of analysis include:

- Cost
 - CAPEX & OPEX, underlying cost components & evolution
- Financing
 - Equity, debt, state & utility incentives
 - Focus on the \$10M California Energy Commission (CEC) grant
- Revenue
 - Charger utilization, rates, LCFS, solar power sale
- Site adequacy
 - Site footprint & project design optimization
 - Utility infrastructure & availability to provide power

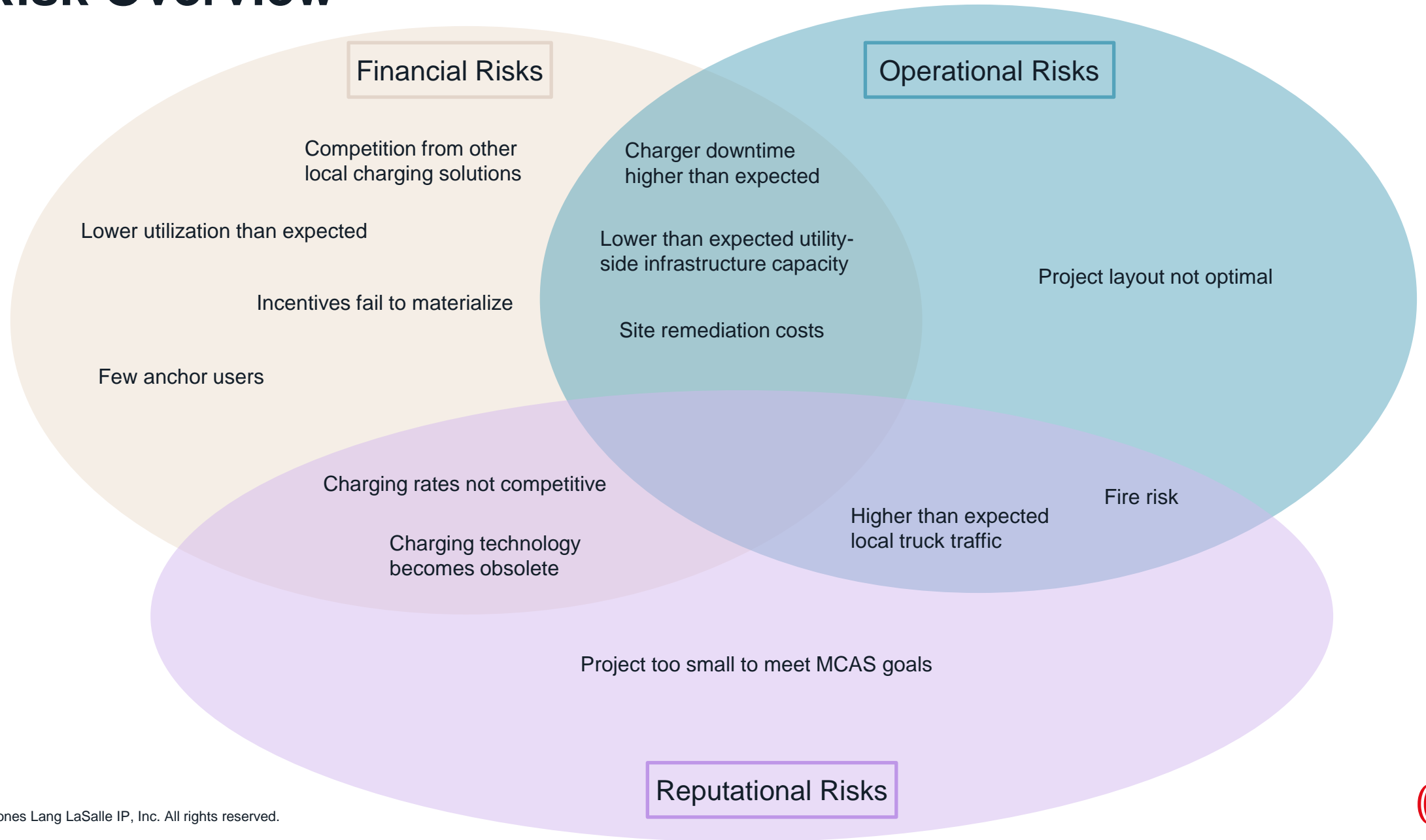


04 What we did

- Researched using public sources to independently confirm SC economic & technical assumptions
- Validated proforma results, including:
 - Charger utilization
 - LCFS revenue
 - Financing
 - CAPEX
 - OPEX
- Sent clarification questions to SC, regarding:
 - Assumption details
 - Assumption sources
 - Updates to correct identified proforma errors
- Interviewed key PoSD stakeholders & regional trucking firms
 - Assessed interest & plans relative to BET transition for potential users
 - Gauged interest in the Trucking-as-a-Service offer as envisioned by SC
- Performed Financial Sensitivity Analysis on key parameters



05 Risk Overview



06 Risk Mitigation

Due to the nature of the risks involved, PoSD would benefit from treating this transaction more akin to a Public-Private Partnership (P3), where the Port can expect rights beyond that of a typical lessor. The table below identifies key risks and potential mitigation solutions as well as specific risks that likely have applicable mechanisms that we recommend incorporating into the lease.

Risk	Category	Level	Potential Mitigation Solution(s)	Recommended focus in lease documents*
Charging rates not competitive	Financial & Reputational	Low risk	Proposed prices are currently competitive. If bundled with TaaS, overnight charging will be insulated from price competition. SC has a financial incentive to keep rates competitive.	X
Competition from other local charging infrastructure	Financial	Low risk	Local & regional charging infrastructure availability (especially very fast chargers) has consistently lagged EV adoption and it is expected to remain so due to utility infrastructure constraints and high capital costs. Project will be placed near the NCMT, a strategic location for BET charging. To keep the ZE truck stop competitive, SC can lower charging rates and improve the quality of the user experience.	
Lower utilization than expected	Financial	Significant risk	Truck stop can be opened to other users, for fleet charging or to other vehicle classes (MD/LD vehicles) until BET utilization ramps up. Opportunity chargers can be repurposed into overnight chargers as needed.	X
Few anchor users	Financial	Moderate risk	Open truck stop to non-Port serving trucks. Partner with nearby entities for fleet charging.	
Incentives fail to materialize	Financial	Low risk	SC applied for other grants. No concerns were identified in obtaining the utility rebate and capturing the tax credits modeled. Should key incentives not materialize, SC may request to negotiate proposed rent amounts.	X
Site remediation costs	Financial & Operational	Moderate risk	Although port sites often have remediation costs, no remediation costs modeled for project. Perform geotech study early to assess any remediation and adjust project expectations as needed.	X
Charger downtime higher than expected	Financial & Operational	Moderate risk	SC will partner with reputable CPO to operate and maintain the truck stop. Include lease provision to have uptime requirements and maintenance standards.	X
Lower than expected SDG&E infrastructure capacity	Financial & Operational	Moderate risk	Peak demand in early years may be lower than expected. Smart demand management using solar & BESS should help mitigate capacity issue. SC can install a temporary microgrid solution to avoid delaying the project with interconnection-related issues, at its cost.	X
Charging technology becomes obsolete	Financial & Reputational	Moderate risk	Chargers are expected to be replaced in Year 10. Competing FCEV technology is less mature and expected to be reserved for long-haul trucks. If power rating become insufficient to be used as opportunity chargers, chargers can re-purposed for overnight charging or targeted for other vehicle populations (e.g. MD trucks).	X
Project too small to meet MCAS goals	Reputational	Moderate risk	Project likely to have enough capacity to reach the 40% interim MCAS goal. Proceeding with a potential Phase 2 would help increase the number of trucks served, although will likely not be enough on its own to meet the ultimate 100% goal.	
Project layout not optimal	Operational	Low risk	Thorough preliminary review. Extra space available in the southern end of the parcel to expand the footprint of the truck stop if needed. Involve potential tenants in design review.	X
Higher than expected local truck traffic	Operational & Reputational	Low risk	Perform a traffic analysis to determine impact on surrounding roads of truck stop operating at maximum capacity. Communicate benefits of reduced local air & noise pollution while offering job training program to nearby communities.	X
Fire risk	Operational & Reputational	Low risk	SC is developing a Fire Prevention and Preparedness Plan in line with county, city & Port guidelines. Pursue grant funding for firefighting equipment identified by SC. Communicate to nearby communities on measures taken to address fire risks specific to batteries.	X

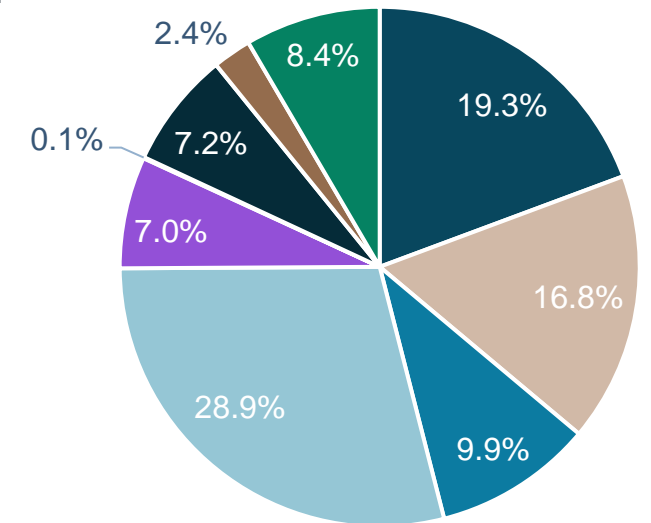
Cost assumptions

07 Capital Expenses

Based on SC's latest proposal*, overall CAPEX estimates are in line with market.
JLL recommends additional assessment(s) upon submission of subsequent design milestones

- Most CAPEX are site-level values (not broken down by unit cost & quantity)
 - CAPEX assumptions based on preliminary design stage and JLL recommends additional review when more detailed design has been submitted to PoSD
 - Next design milestones will provide greater cost granularity and firmer estimates
- Charger hardware costs varies
 - Overnight charger costs in line with cost estimates obtained by JLL
 - Opportunity charger costs appear underestimated and should be further assessed with the next design milestones
- No site remediation costs are currently modeled
 - Given past industrial uses, potential for remediation costs which will be responsibility of SC
 - Could pose financial & operational risks and complications if contaminants found requiring remediation
 - Potential costs unknown until geotech study completed
- No interconnection costs are modeled, assumes no significant upgrades on utility-side infrastructure
- Proposal doesn't include CAPEX related to the Trucking-as-a-Service (TaaS) offer envisioned by SC
- 10% contingency (\$3M) & ~15% capital reserves (\$4.5M) budgeted to address unexpected cost increase

Capital Expenditures



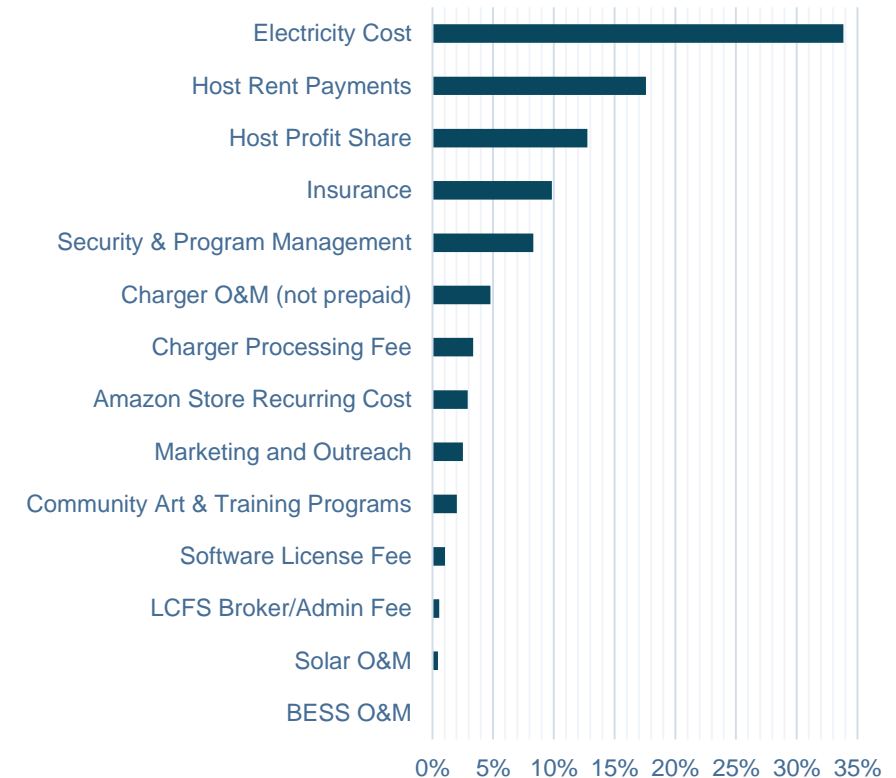
- Civil & Concrete Work
- Solar
- BESS
- Electrification
- Project Indirect Cost
- Community Engagement
- Equipment Replacement (Year 15)
- Amazon JWO Store
- Contingency

08 Operational Expenses

Based on SC's latest proposal*, overall OPEX estimates are in line with market

- Electricity is the biggest component of OPEX expenses
- SC modeled SDG&E rates are slightly higher than 2024 published rates (~\$6M savings over project lifetime)
- After initial 5-year O&M contract, SC assumes ~30% increase in annual charger O&M costs, likely conservative
- Standard 2% annual cost escalation for all OPEX (except Community Art & Training Programs & Host Profit Share), long-term inflation estimate
- Several OPEX values (e.g. Marketing and Outreach) were not detailed, but represent a small share of expenses

Operational expense breakdown (2024-2045, nominal \$)

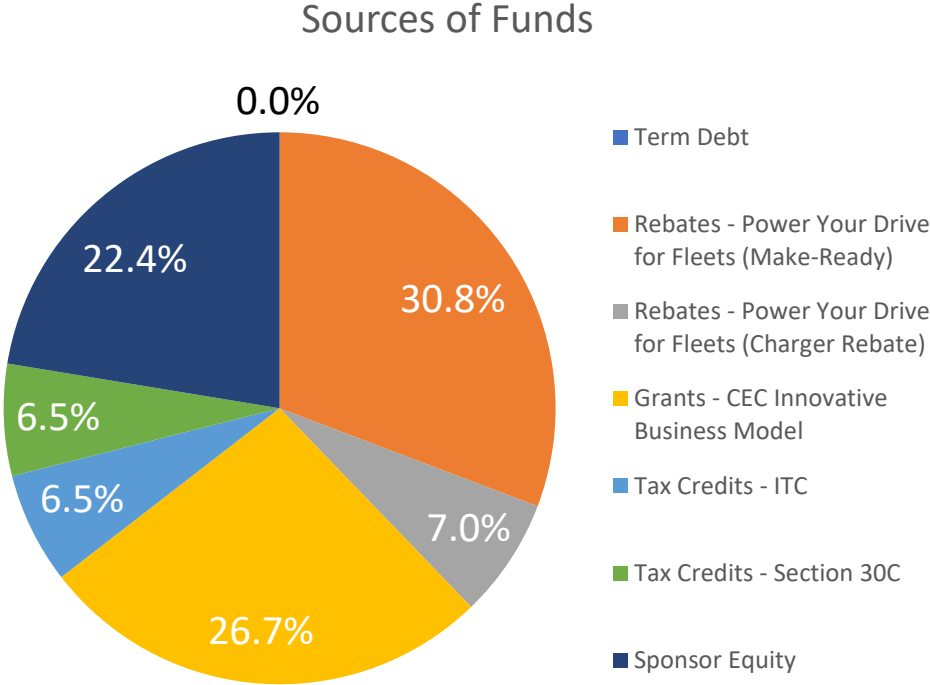


Financing assumptions

09 Source of Funds

This analysis reviews sources of funds leveraged by SC to fund the project, which is key to understand potential financial risks to completing the project

- Utility **rebates** (37.8%, \$14.1M), **grants** (26.7%, \$10M) and federal **tax credits** (13%, \$4.9M) **are expected to finance most of the project**
- Remainder (22.4%, ~\$8.4M) financed entirely with equity, **no debt expected**
- Equity provided by parent, Skyview Ventures
- SC revised initial proposal by replacing debt with a \$10M CEC grant
 - **CEC officially awarded the grant to SC at its August 2024 meeting**
 - Funding can be applied to infrastructure investments (e.g. charging equipment, customer-side infrastructure, solar dedicated to charging)
- **Relatively conservative approach, with some margin of error**
 - Captured value of tax credits is conservative (e.g. project likely eligible for the Energy Community bonus of the ITC but not modeled)
 - SC applied for other grants that are not priced in the proposal



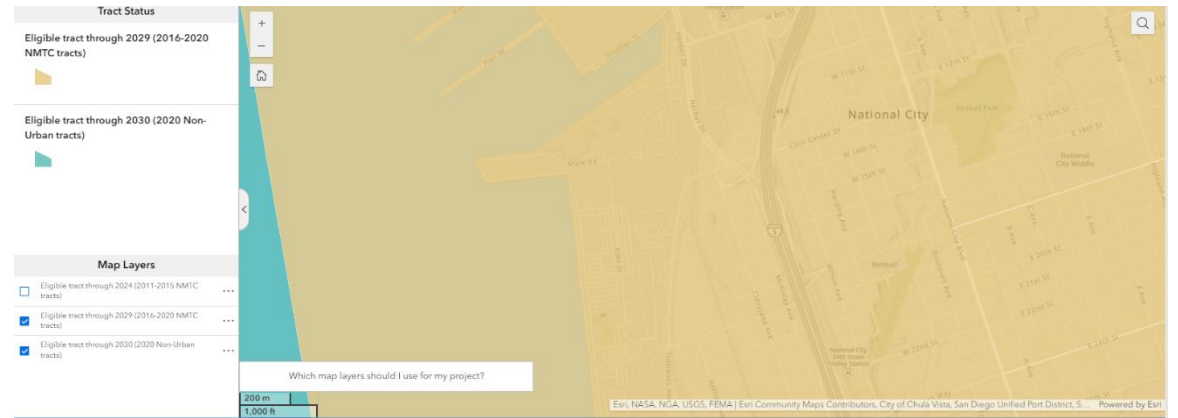
Not included: EPA Clean Ports (26.5%) & Carl Moyer (13.3%) grants

10 Tax credits

SC modeled tax credits conservatively and could potentially capture up to and additional \$2.44M (+49.8% value)

- Section 30C tax credit:
 - Covers 30% of capital costs, up to \$100k per charger
 - Project located in an eligible census tract
- Investment Tax Credit (ITC):
 - Covers 30% of capital costs for solar & BESS
 - Project located in an Energy Community, eligible for 10% bonus (**not assumed in Source of Funds**), worth ~\$957k
- SC plans to sell credits to the market
 - Tax credits priced at 70-85% of face value to account for Transferability (selling of credits)
 - Market rate for ITC is ~91%, may be lower for Section 30C
 - Potential to retain up to \$1.5M extra value depending on market price or if SC uses to offset its own tax liability
- Implies compliance with prevailing wages and apprenticeship provisions for both credits

Section 30C Tax Credit Eligibility map



Source: [30C Tax Credit Eligibility Locator, US Department of Energy](#)

Energy Community Tax Credit Bonus map



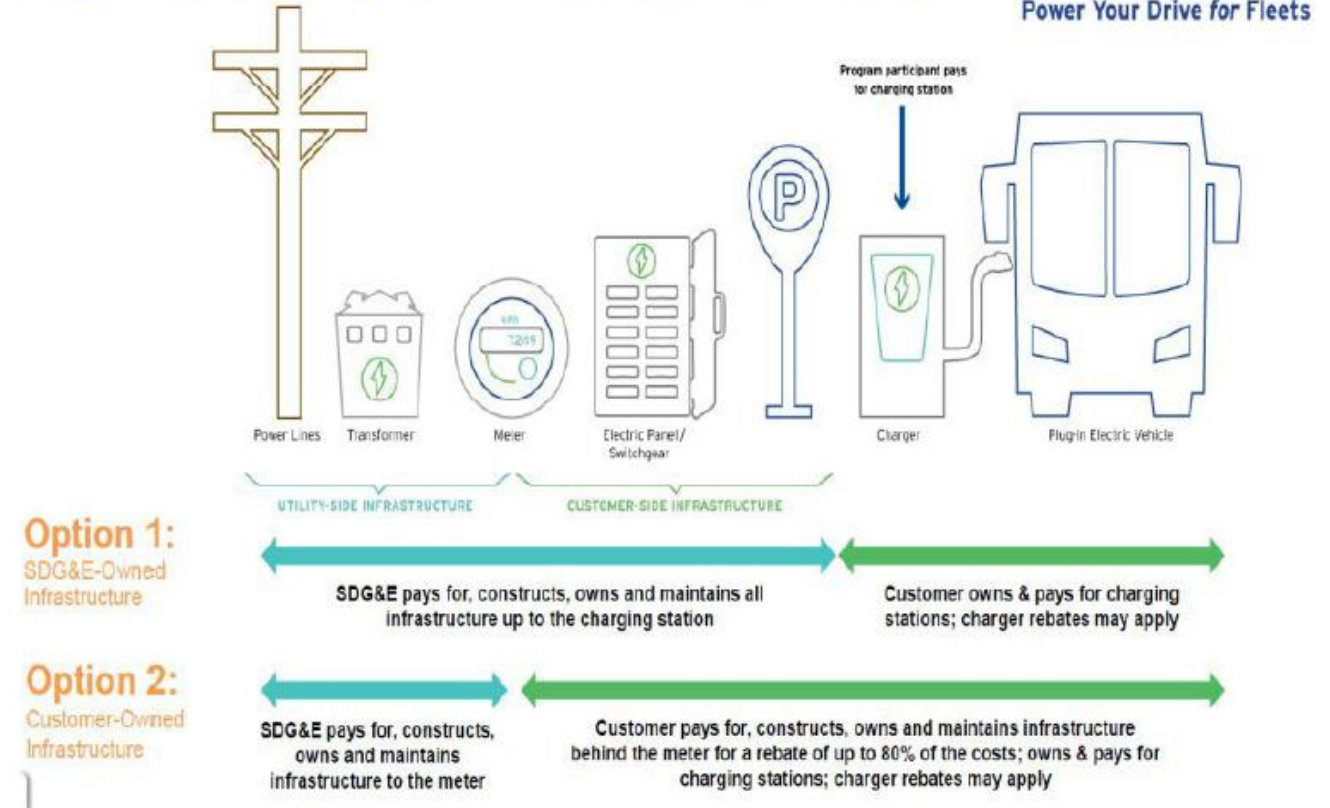
Source: [Energy Community Tax Credit Bonus map, US Department of Energy](#)



11 SDG&E Power Your Drive for Fleets

- SDG&E can install and finance electrical infrastructure between chargers and the electric grid (“make-ready”)
- SC required to pursue Make-Ready Option 2:
 - SC will build & own customer-side infrastructure
 - SDG&E provides a rebate for up to 80% of costs
 - **SC assumes max rebate obtained** (~\$11.5M rebate)
- Cost basis used by SC in line with eligibility under the program
- Charger rebates
 - Qualifies for charger rebates because located in a [SB535 Disadvantaged Communities census tract](#)
 - For 150.1+ kW chargers: 50% of charging hardware costs, up to \$75k (\$2.6M total)
- Project should easily meet program requirements
 - Own/lease property & maintain chargers for min 10 years
 - Send daily, 15-min interval utilization data to SDG&E
 - Procure at least 2 electric fleet vehicles
 - Long-term electrification growth & load increase

Program offers two options for installation & ownership



Source: [Power Your Drive for Fleets, SDG&E](#)

12 Other grants

- **Additional grants could result in more funding (~\$15M requested)**
 - Award considered less likely than other funding, but no major eligibility obstacles identified
 - **Not modeled in Source of Funds. If materialize, project economics will improve and could result in negotiation for increased rent for PoSD.**
- **EPA Clean Ports Program**
 - Available for customer-side infrastructure & ZE port equipment costs
 - Applied to charging equipment and solar & BESS costs (if dedicated to EV charging)
 - Need to comply with Build American, Buy American requirements
 - Project eligible to receive funds from the \$250M earmarked for small water ports
- **Carl Moyer Memorial Air Quality Standards Attainment Program**
 - Provides annual grants for cleaner-than-required equipment providing early or extra emission reductions
 - Can fund HD truck replacement & BEV charging infrastructure
 - Project eligible for funds earmarked for EJ areas (min 50%)
 - Project must be accessible on a 24-hour basis
 - Potential obstacles
 - Must be for emission reduction not mandated by any regulation
 - Min project life is 3 years, but maximum project life of 15 years

EPA Clean Ports Program grant range (ZE Technology Deployment Competition)

Tier	Port Type	Applicant Type	EPA Funding Range per Award	EPA Share of Total Project Cost (Maximum)	Mandatory Applicant Share of Total Project Cost (Minimum)	Anticipated Number of Awards
Tier A	Water ports only	Any eligible entity	\$150,000,000 - \$500,000,000	80%	20%	5-10
Tier B	Water or dry ports	Any eligible entity	\$10,000,000 - \$149,999,999 (Projects at small water ports: \$5,000,000 - \$149,999,999)	90%	10%	25-70
Tier C	Water or dry ports	Tribal applicants only	\$2,000,000 - \$50,000,000	100%	0%	2-10

Source: [Clean Ports Program: ZE Technology Deployment Competition Request for Application, US EPA, April 2024](#)

Maximum Percentage of Eligible Cost for Moyer Program Infrastructure Projects

Maximum Percentage of Eligible Cost ^(b)	Infrastructure Projects
50%	All Projects
60%	Publicly Accessible Projects
65%	Projects with Solar/Wind Power Systems ^(a)
75%	Publicly Accessible Projects with Solar/Wind Power Systems ^(a)
100%	Public School Bus Projects ^(c)

^(a) At least 50 percent of the total energy provided to covered sources by the project must be generated from solar/wind.

^(b) Additional 5% funding available to applicants of heavy-duty truck parking facilities that provide communal charging opportunities (e.g., truck yards, truck depot, truck stops etc.)

^(c) Also, may include solar/wind power systems.

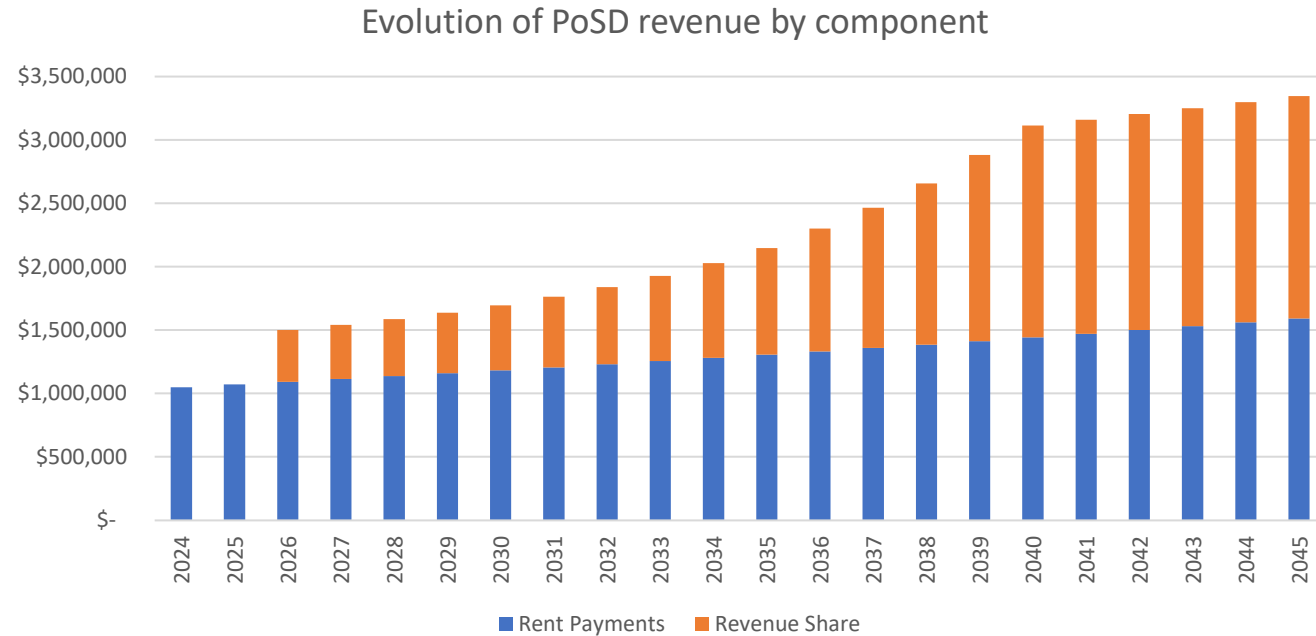
Source: [Carl Moyer Guidelines Chapter 10 Infrastructure, CARB, January 2023](#)



Revenue assumptions

13 PoSD Revenue

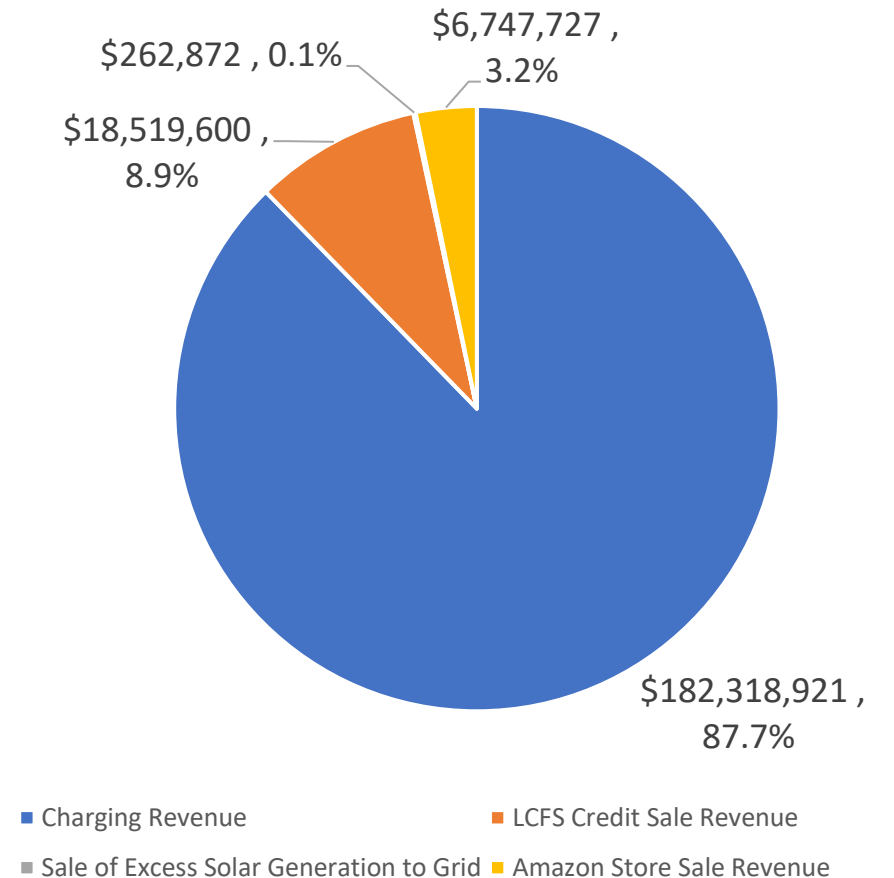
- SC proposes to compensate the PoSD with base rent and revenue share payments
- Rent payments: \$1,050,000/year, starting at lease inception (before project COD), increasing at 2%/year
- Revenue share: 10% of Project Operating Revenue
 - No minimum revenue or restrictive conditions are set
 - Revenue share is calculated before accounting for project expenses and financing costs
 - Depends heavily on charging revenue and charger utilization
- Rent payments are expected to comprise most of PoSD revenue until late in the project lifetime (around 2039)
 - PoSD revenue is mostly insulated from project revenue risk, especially in the first years of project operation
 - If project economics degrade, SC may struggle to pay rent and may seek to renegotiate lease terms



14 Project Revenue Summary

- Charging revenue will determine the economic success of the project
 - Charger utilization rate is the most important metric impacting charging revenue. Comparing SC assumptions against the best available forecasts at the local, state and national levels was performed in order to assess risk.
 - Adequation of the project's equipment with projected charging needs is important to ensure the project will address the needs of potential customers.
 - Project charging rates must stay competitive with the local & regional offer.
 - Interviews of key PoSD tenants and local trucking companies provided valuable qualitative insights into interest for short-term acquisition of BETs and existing barriers to adoption.
 - Utilization may be lower in the early years of the project, highlighting the need to explore alternative approaches to shore up demand.
- Several factors impact the LCFS revenue, including the expected credit price curve and the evolution of the grid's carbon intensity.
- Determining the use case for the solar & BESS system is important for the efficient operation of the truck stop, although revenue from selling solar power is negligible.

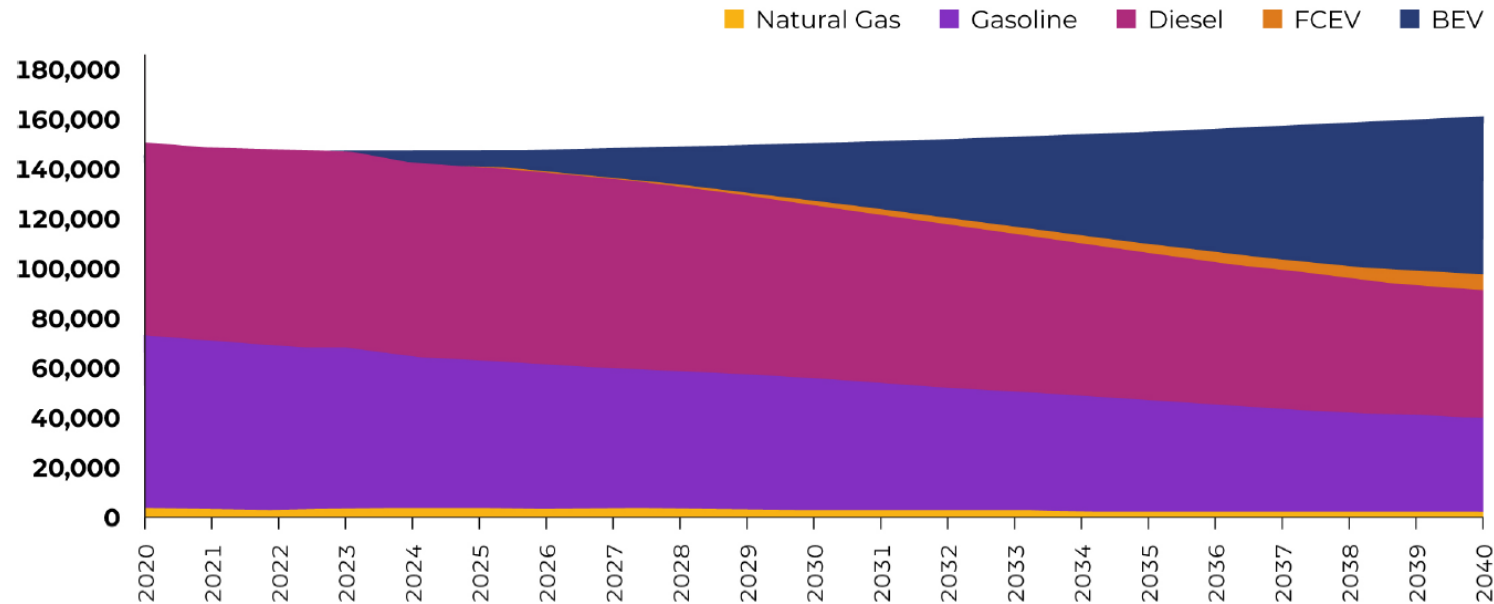
Revenue Breakdown (2026-2045, nominal \$)



15 Charging revenue – utilization forecast (San Diego)

- ZET adoption forecasts in the San Diego area:
 - San Diego Association of Governments (SANDAG) doesn't disaggregate data for HD BETs specifically
 - 5,282 ZE MD-HD in 2024 (assuming all BEVs)
 - 64,000 MD-HD BEVs in 2040
 - Average increase of ~17%/year for MD-HD BEVs
 - Assuming HD BETs grow at a similar rate, **this is roughly consistent with the 20% annual utilization increase assumed by SC for opportunity chargers over the same period**

Figure 5. San Diego Region's MD-HD Vehicle Population by Fuel Type



Source: [Medium-Duty and Heavy-Duty Zero Emission Vehicle Blueprint, SANDAG, January 2024](#)

16 Charging revenue – utilization forecast (California)

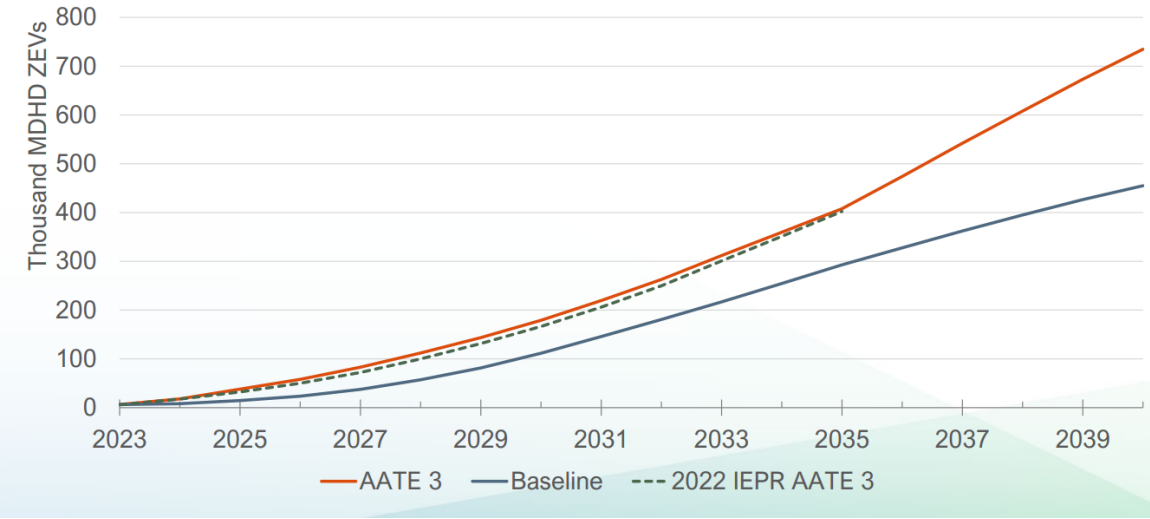
- Population of HD BETs in CA is estimated at 773 trucks in 2023 (~21.6% of MD-HD ZEVs)
- Transition to ZEV trucks driven by CA Air Resources Board's (CARB) Advanced Clean Fleets (ACF) rule, following the schedule below:

Zero-Emission Fleet Percentage	10%	25%	50%	75%	100%
Group 1: Box trucks, vans, 2-axle buses, yard trucks, light-duty package delivery vehicles	2025	2028	2031	2033	2035
Group 2: Work trucks, day cab tractors, 3-axle buses	2027	2030	2033	2036	2039
Group 3: Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042

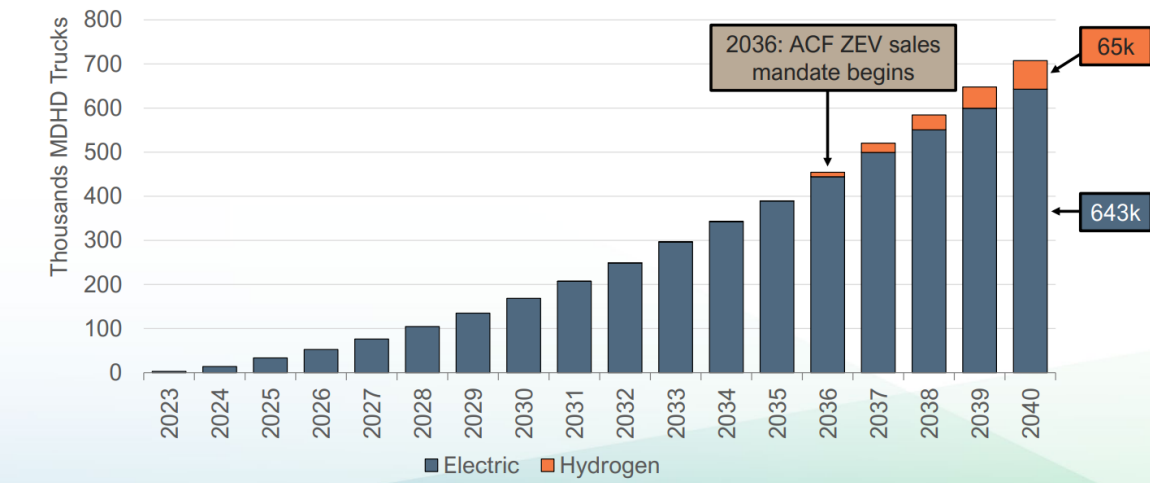
Source: [CARB ACF FAQ](#)

- CEC forecasts MD-HD ZEV trucks to reach 410k-643k in 2040
 - Assuming share of HD BETs among MD-HD ZEV population stays constant over time, this represents ~87k-139k HD BETs in 2040
 - Average increase of 32-35%/year over 2023-2040
 - Higher than the 20% annual utilization increase assumed by SC for opportunity chargers over the same period**

2023 IEPR MDHD ZEV Results Compared with 2022 IEPR AATE 3



IEPR 2023 AATE 3 Zero-Emission Freight Truck Stock



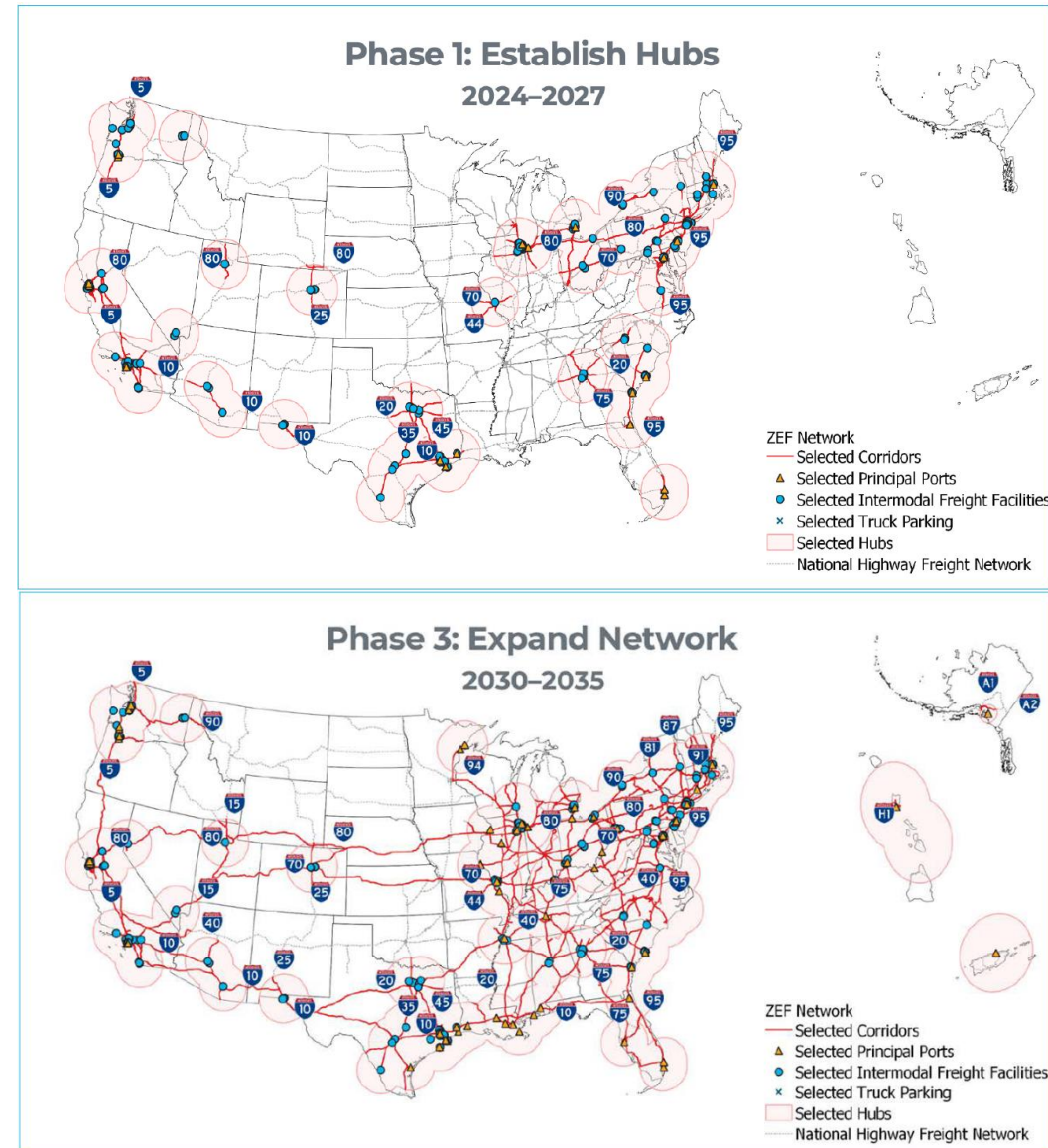
Details about the CEC scenarios presented here can be found in Appendix.

Source: [2023 Integrated Energy Policy Report, CEC, February 2024](#)



17 National ZE Freight Corridor Strategy

- **National strategy** identifies areas where ZE HD truck adoption has the best chances to grow & succeed first
- Used to focus federal investment & mobilize market activity to develop ZE charging infrastructure
- PoSD trucking ecosystem (100mi radius) identified as Phase 1 priority development
 - ZE Fuel corridors: I-5, I-15 & I-805
 - ZEF Hubs: PoSD Intermodal Freight facilities
- In line with project timeline
 - ZE truck stop to open during Phase 1 (2024-2027)
 - ZE truck stop utilization to ramp up as regional network consolidates in Phase 2 & 3 (2027-2035)
- **Favorable conditions exist for successful project**

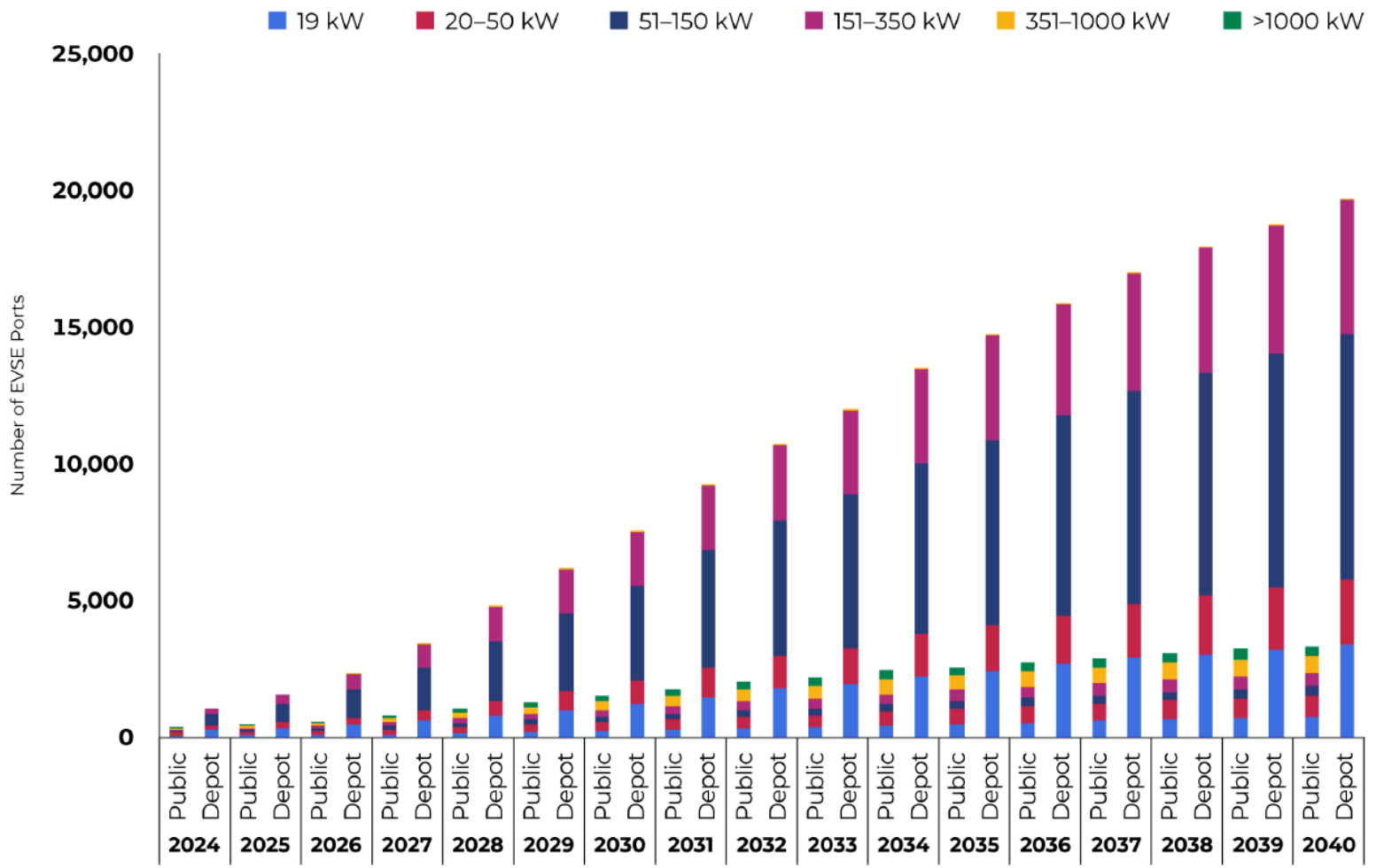


Source: [National Zero-Emission Freight Corridor Strategy, Joint Office for Energy and Transportation, March 2024](#)

18 Charging revenue – Charging needs forecast (San Diego) Page 26 of 44 B

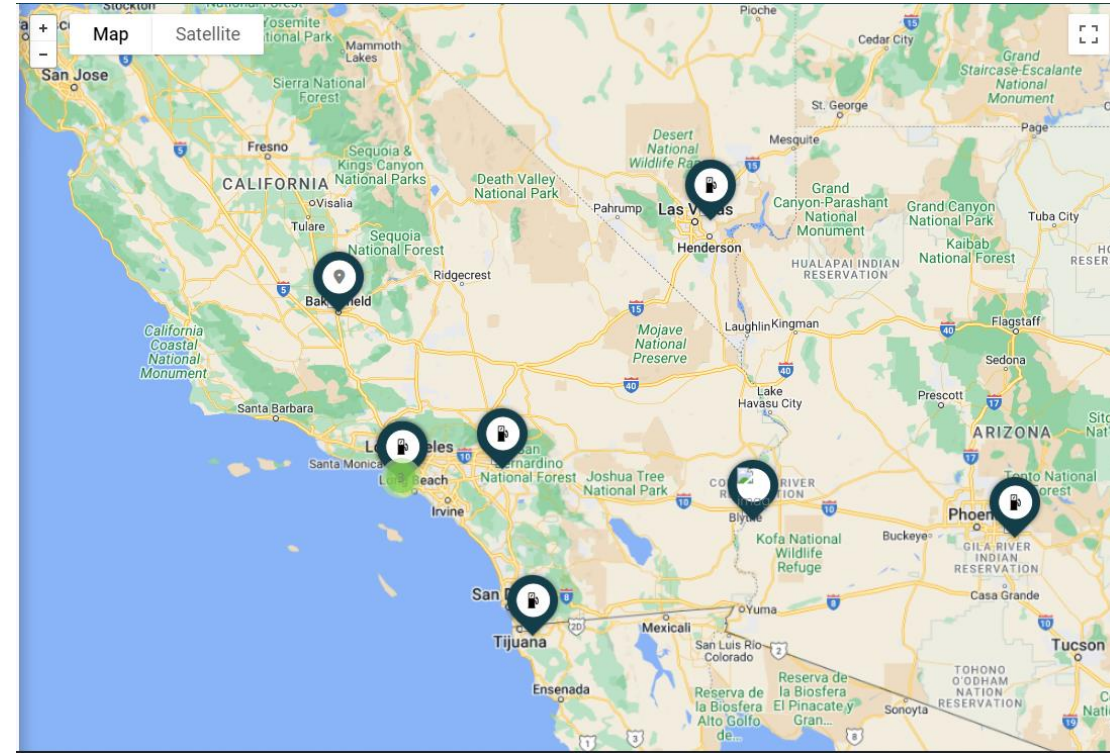
- **Project chargers are in line with SANDAG estimates for future charging needs in the San Diego region**
 - Much bigger need for Depot charging (i.e. similar to overnight charging)
 - Good fit for potential TaaS model
 - Power rating of project chargers (360 kW & 160 kW) in line with forecasted need, especially for the HD truck segment
 - Some uncertainty about the exact requirement for HD BETs, but overall charging need is massive, limited risk of charging infrastructure oversupply

Figure 8. Number of MD-HD Public and Depot Chargers by Power Level



19 Charging revenue – Charging rates

- SC will charge \$0.55/kWh for Opportunity chargers, \$0.45/kWh for Overnight chargers (+1%/year) to Port-serving trucks
 - Non-Port serving trucks will pay an estimated 10% premium (not priced in)
- **Rates appears competitive with existing truck charging stations in California**
 - WattEV charges \$0.49/kWh (off-peak) & \$0.86/kWh (on-peak) hours at its CA locations
 - Port of Long Beach: 360 kW: 24 ports
 - San Bernardino: 360 kW: 24 ports
 - Bakersfield: 240 kW: 15 ports; 360 kW: 32 ports; 1.2MW: 3 ports
 - TruckNet truck stop (San Diego-based) charges \$0.99/kWh (250 kW: 10 ports)



Source: [ZEV Lane](#)

20 Interview highlights (1/2)

- Conducted interviews with:
 - Key stakeholders at the National City Marine Terminal
 - Trucking companies servicing the PoSD and the surrounding region
- Obstacles to adoption of BEV trucks:
 - Limited range of available BEV trucks presents the biggest obstacle, usually insufficient to cover the typical regional route (200-250 mi/day)
 - Limited model & configuration availability, especially for specialized trucks (car carrier, refrigerated trucks)
 - Higher upfront cost can be a challenge, but incentives & financing exist
 - One respondent mentioned lack of availability of local qualified personnel for repairs & long delays to order BEV trucks
- Charging patterns:
 - Respondents tend to favor overnight charging, which integrates better with their operations
 - Several respondents currently have their own charging infrastructure on PoSD property (1 port assigned per vehicle)
 - Opportunity charging considered more disruptive & costly (possible extra downtime during shift, need to find charging off-Port)
 - Dedicated charging is a key requirement for tenants. If not available, tenants will likely continue investing in their own infrastructure
 - Many truckers are infrequent or one-off visitors to the PoSD, which could limit demand for opportunity charging at the ZE truck stop
 - Limited first-hand experience with BEV HD truck for delivery beyond some local routes

20 Interview highlights (2/2)

- Acquisition plans:
 - One respondent doesn't own & operate trucks (only BEV cargo handling equipment) and has no incentive to request BEV trucks
 - One respondent uses mostly long-haul trucks, subject to longer regulatory timeline to transition to ZEV under the ACF regulation, compared to drayage & off-road trucks
 - One respondent just renewed their diesel truck fleet lease and doesn't plan to acquire BEV trucks until the technology improves
 - One respondent thought FCEVs might be a better fit for their needs, expressed interest in a "truck swapping" solution that would avoid driver downtime
- Interest in Trucking-as-a-Service (TaaS):
 - Broadly similar to how stakeholders currently obtain trucks (leasing)
 - More interested if TaaS is bundled with dedicated charging
 - Would need to address transition costs (e.g. outstanding loans) to be viable
 - Difficult to accurately gauge interest since many future details are unknown



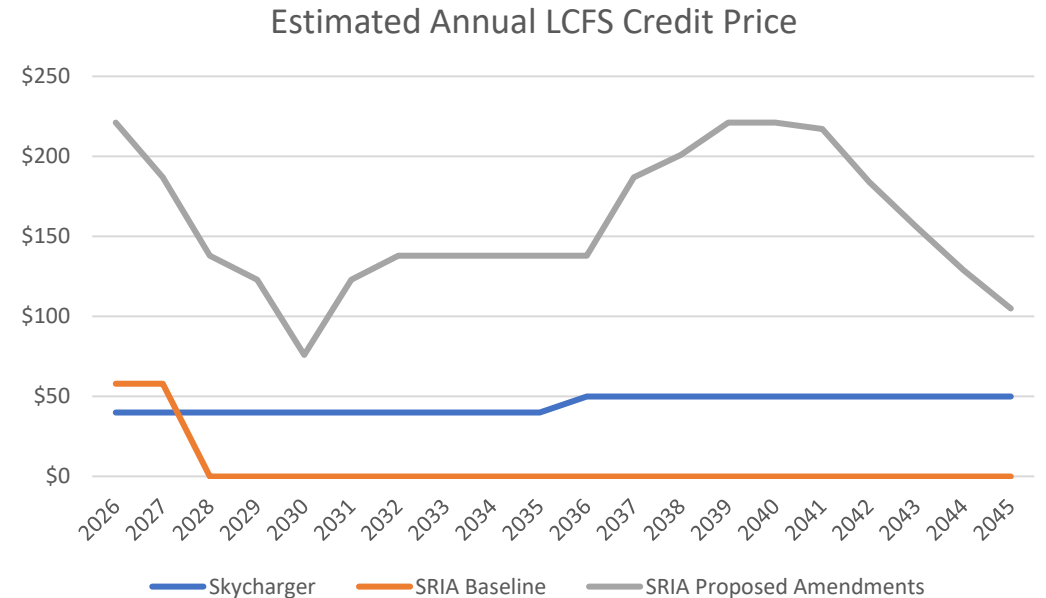
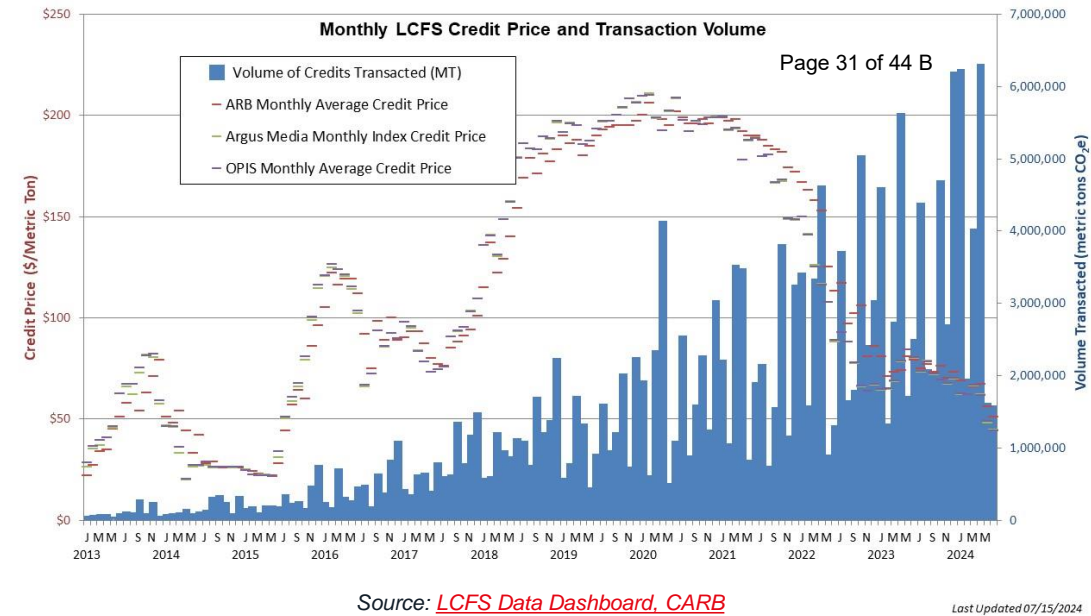
21 Charging revenue – Mitigation

- Opening to non-Port operators could help mitigate lower utilization in early years:
 - Partnership with National City & City of San Diego for fleet charging
 - NC have plans to transition their LD & MD fleet to EV
 - Good synergy since NC is likely to have issues to develop their own infrastructure
 - Consistent with MCAS goal of enabling nearby communities and advance emission reduction projects around the Tidelands
 - PoSD is a special district of the State and needs authorization from CA State Lands Commission for municipal use on PoSD property (currently under discussion)
 - Nearby distribution facilities might be interested in fleet charging for MD trucks
 - Opening to non-Port serving vehicles would be a temporary solution, until a predetermined utilization level is met
 - Non-Port utilization is not currently modeled in SC proforma
- Opportunity chargers can be temporarily repurposed for overnight use as needed, providing operational flexibility



22 LCFS revenue

- Credit price:
 - SC assumes the LCFS program will be amended in some way and continue beyond 2030
 - Amendments to the LCFS program are currently under consideration
 - Credit prices have shown to be volatile and hard to predict
 - SC proposes 100% of credits sold to SC's parent company under long-term fixed price contract **to shield project from price volatility**
- Grid Carbon Intensity (CI):
 - CA passed SB100 in 2018, mandating that 100% carbon-free electricity in 2045 => grid CI must reach 0 gCO₂e/MJ by 2045
 - SC assumes CA grid's average CI will decrease by just 2% annually, reaching -36% in 2045 compared to 2021 levels
 - LCFS credits are calculated by using the difference between diesel CI (fuel displaced) and grid electricity CI (fuel replaced)
- LCFS revenue also depends on utilization
- **LCFS credit & revenue estimates are likely conservative**



Source: [LCFS 2023 Amendments Standardized Regulatory Impact Assessment \(SRIA\), CARB, September 2023](#)



23 Solar revenue

- Solar & BESS assumptions aligned with market
- Solar & BESS use case:
 - Main use case is power demand management (peak shaving)
 - SC mentions that solar & BESS will also be used for resiliency & operation during grid outages
 - Could power all overnight chargers for a little over an hour on a full battery
 - Resiliency use implies reserved battery capacity, may not be compatible with other uses
 - Claim that the trucks charged will be “100% renewable energy powered” is at odds with the proforma which shows significant purchases of grid electricity.
- Extra solar generation may be sold to the grid in the first few years
 - Compensation for solar exported to the grid can vary widely by the hour
 - May bring more revenue by strategically shifting excess solar production to high value times (typically 4-9pm), especially if low utilization at peak times
 - **As assumed, revenue from solar sold to the grid is negligible overall (~0.13% of project lifetime revenue)**

		2026-2044 SDG&E Average Delivery Export Pricing (\$/kWh, all days)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hour of the day	0	0.00893	0.008991	0.008588	0.004829	0.00638	0.020391	0.033938	0.047714	0.010137	0.009506	0.009213	0.009183
	1	0.008906	0.009039	0.008379	0.004084	0.00587	0.014588	0.022539	0.023218	0.010226	0.009533	0.009259	0.009225
	2	0.008787	0.008926	0.008323	0.003732	0.005753	0.011785	0.011526	0.012822	0.010152	0.009466	0.009168	0.009108
	3	0.008738	0.008909	0.008318	0.003979	0.005851	0.008877	0.00908	0.009919	0.010177	0.009459	0.009138	0.009108
	4	0.008835	0.009029	0.008552	0.004252	0.005968	0.00895	0.009166	0.010043	0.010253	0.009571	0.009243	0.009192
	5	0.009174	0.009317	0.008856	0.00412	0.004681	0.008672	0.009195	0.01042	0.01055	0.009903	0.009513	0.009487
	6	0.009942	0.009613	0.008541	0.002763	0.000612	0.003809	0.007826	0.012131	0.009657	0.010469	0.009967	0.009835
	7	0.010052	0.008433	0.004426	0.000705	0.000759	0.006289	0.007276	0.012339	0.005189	0.009086	0.007979	0.010139
	8	0.008729	0.004989	0.002045	0.000252	0.000672	0.004679	0.005881	0.008059	0.0056	0.006728	0.007498	0.009691
	9	0.007934	0.00403	0.001881	0.000632	0.001305	0.005492	0.006455	0.008879	0.005752	0.006722	0.007603	0.008387
	10	0.007194	0.004033	0.0024	0.001309	0.002247	0.006755	0.007295	0.009813	0.006476	0.007238	0.007543	0.00816
	11	0.006917	0.003468	0.002889	0.001536	0.00277	0.008387	0.009015	0.012055	0.006776	0.007458	0.007706	0.008162
	12	0.006604	0.003247	0.003031	0.001501	0.002997	0.01232	0.012568	0.022633	0.007102	0.007746	0.008089	0.007798
	13	0.006201	0.003318	0.002831	0.001249	0.002569	0.017448	0.019646	0.134523	0.113554	0.008232	0.007726	0.007311
	14	0.005323	0.002984	0.002459	0.000906	0.002127	0.022566	0.024336	0.25958	0.227249	0.223636	0.006729	0.006301
	15	0.005204	0.002688	0.002726	0.000679	0.001646	0.025543	0.027801	0.502416	0.360826	0.341065	0.008266	0.007008
	16	0.010661	0.007417	0.004831	0.001534	0.001744	0.336131	0.149679	0.856817	0.41875	0.394603	0.024389	0.011485
	17	0.011841	0.010873	0.009945	0.006599	0.007168	0.349429	0.260948	0.906667	0.431784	0.429013	0.02495	0.011753
	18	0.011684	0.01084	0.011396	0.006421	0.007656	0.195653	0.182859	0.851527	0.434275	0.444948	0.025255	0.011373
	19	0.011511	0.010846	0.010832	0.005909	0.00783	0.142554	0.109122	0.56169	0.226752	0.112592	0.014438	0.011217
	20	0.011154	0.010686	0.010473	0.005574	0.007176	0.08093	0.082969	0.20732	0.067127	0.05841	0.012539	0.011016
	21	0.010565	0.010375	0.010081	0.005333	0.006719	0.049099	0.041541	0.094438	0.014657	0.020678	0.010715	0.010772
	22	0.009841	0.009647	0.009568	0.005638	0.006979	0.060721	0.074022	0.075822	0.026474	0.013034	0.010115	0.0102
	23	0.009329	0.009717	0.009334	0.006103	0.007385	0.04143	0.057668	0.063215	0.021414	0.010079	0.009959	0.00973

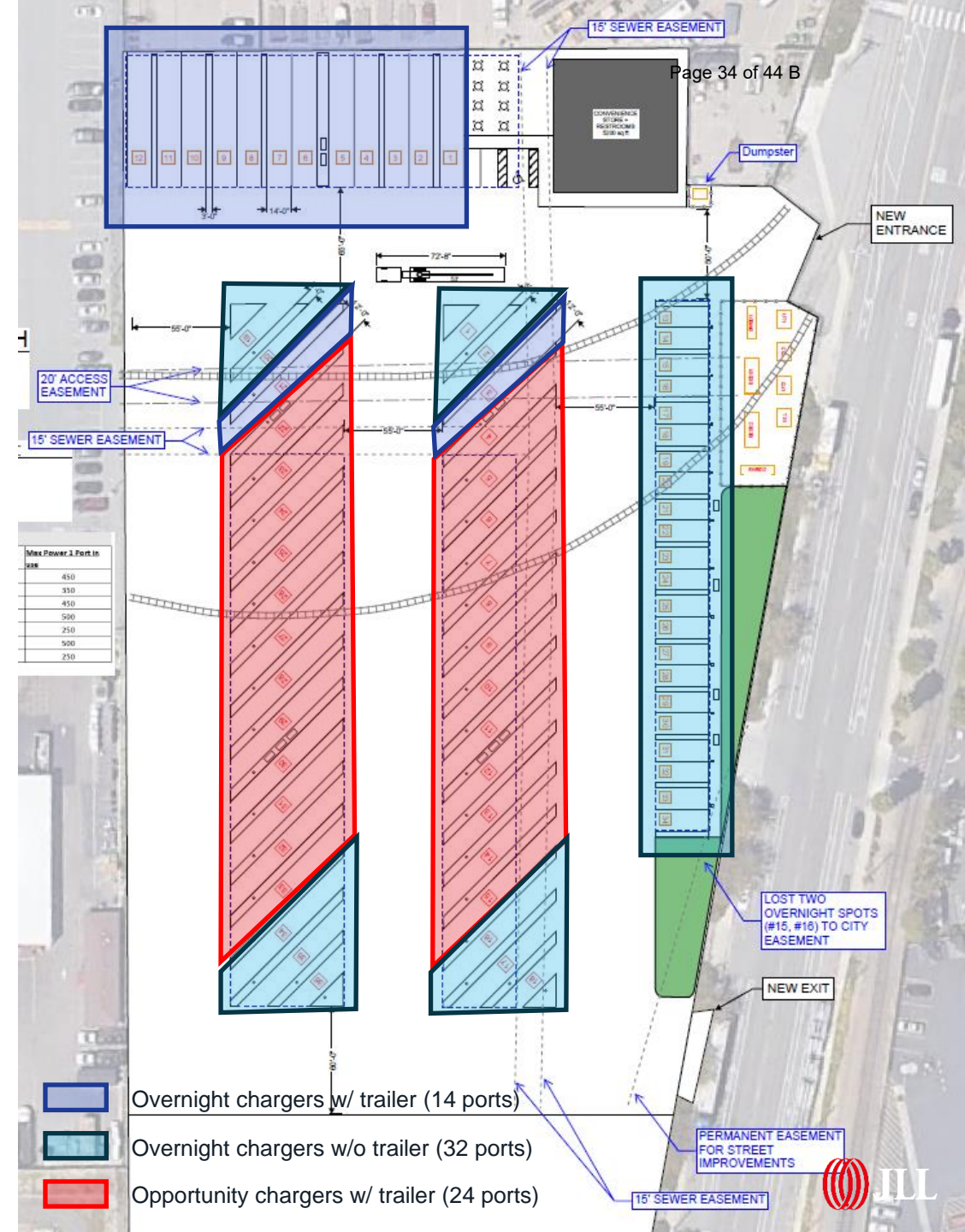
Source: [SDG&E Solar Billing Plan Export Pricing](#)

Site adequacy assumptions

24 Project design

JLL has reviewed the project's successive designs & site plans to assess feasibility and operational risks

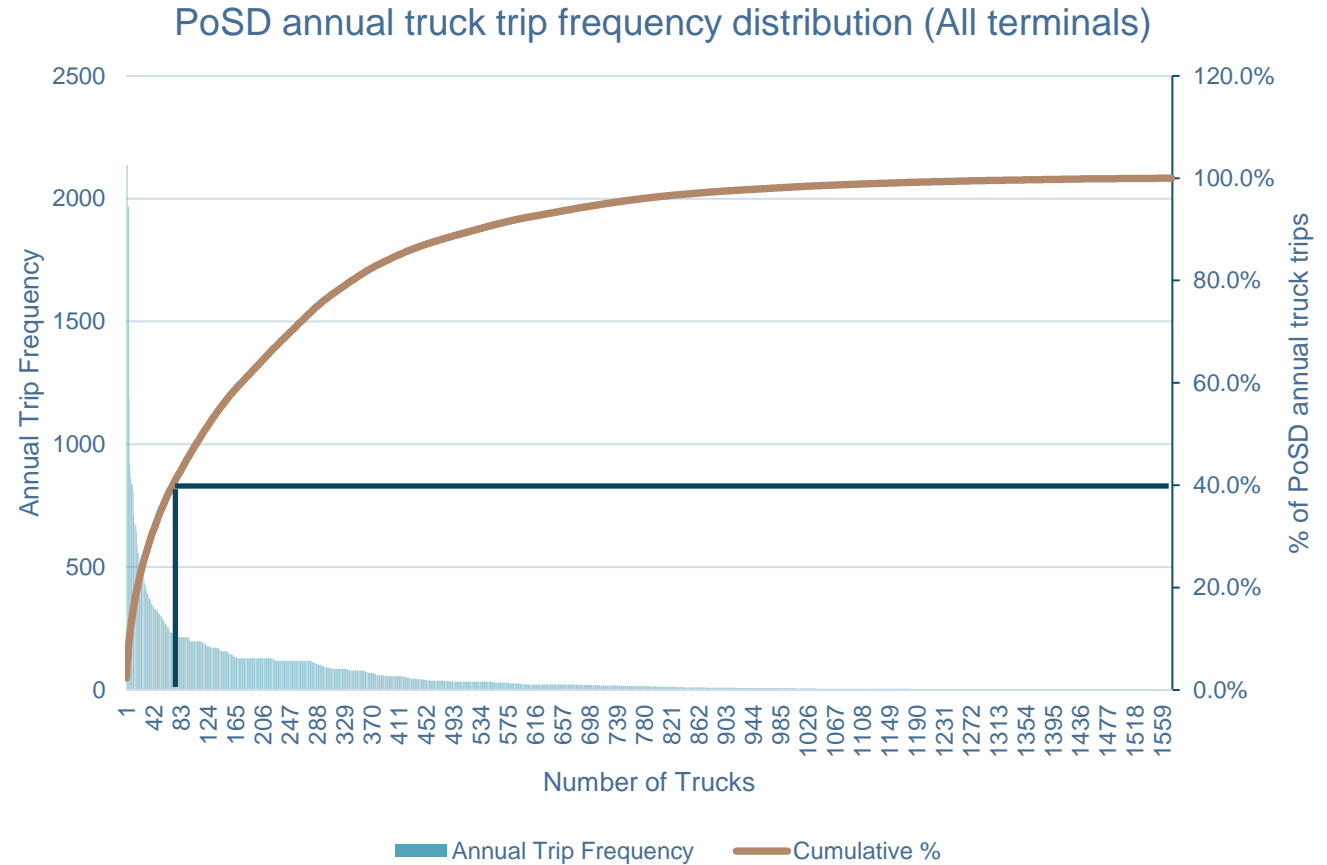
- Site layout revision under way
 - Need to account for recently discovered sewer and rail easements and their implications for the project layout are under review
 - Scaling back solar canopy, which can't be built above easements
 - Exploring cantilevered solution to make up for some lost capacity
 - A loss in solar capacity from new design unlikely to impact project economics
- Current design appears reasonable given the constraints
- Some potential concerns about truck circulation
 - Tight layout, makes truck maneuvering on site challenging => SC should provide a turning analysis to confirm all spots are accessible
 - Confirm no negative impact on parking & bike lanes on Tidelands Avenue
 - EPC is working on final design to incorporate these considerations
- Project footprint
 - Unlikely the project could deliver the same number of chargers on a smaller footprint
 - SC may need to expand design slightly to the south of the parcel



25 Adequacy with MCAS goals

JLL is validating SC’s statement that project could provide charging to the “40-45 trucks that make 40% of Port’s trips”, enabling the successful completion of the 2026 MCAS truck transition goal

- Port Plan, released on June 2022
 - Truck movement database from the study is the best available source of truck data
 - Sample truck population, based on 2021 & early 2022 data
 - Assuming trucks accounting for most of the PoSD’s trips (“frequent flyers”) are replaced by BETs first
 - Filtering out trucks that can’t be readily replaced by BETs (using battery size assumptions from the study) **means 83 EV-ready trucks account for 40% of PoSD trips**
 - Given its large capacity & makeup of opportunity & overnight chargers, **the ZE truck stop is expected to service enough trucks to help the PoSD reach its goal of 40%** of PoSD’s annual truck trips covered by ZE trucks (MCAS Truck Objective 1A).
 - The ZE truck stop is **unlikely to contribute significantly to meeting the 40% PoSD goal by its June 2026 deadline**, as project COD is expected in 2026 at the earliest.
 - Meeting the MCAS 100% goal would require serving thousands of trucks, which is beyond the capacity of any single charging facility



Source: [HD ZE Truck Transition Plan, Port of San Diego/WSP, June 2022](#)

26 Other assumptions

JLL reviewed many other assumptions from SC's proposal. Below are notable takeaways:

- Utility infrastructure availability
 - SC assumed 5MW of available utility infrastructure, based on information originally provided by SDG&E
 - SDG&E likely noncommittal until a formal interconnection application commences
- Schedule
 - Current COD end of 2025/early 2026 will likely not be met
 - Biggest risks to schedule are timeline for utility interconnection process & CEQA review
- Charger technology
 - Charger Power Ratings:
 - 360 kW is currently on the high end of readily available opportunity chargers but could fall on the low end if higher standards (e.g. Megacharger) become commonplace
 - 160 kW for overnight chargers expected to be sufficient for the foreseeable future
 - Connectors:
 - All dispensers will be equipped with one CCS type 1 and one NACS connector, the two most prevalent standards in use for BETs
 - Adaptors will be included for vehicles that are not equipped with CCS or NACS plugs



27 Next Steps

- JLL can participate in review process for subsequent design milestones
- JLL can participate in discussions to flesh out project risks and recommend contractual and commercial mechanisms to derisk project
- JLL can support Term Sheet and Lease Negotiations



Thank you



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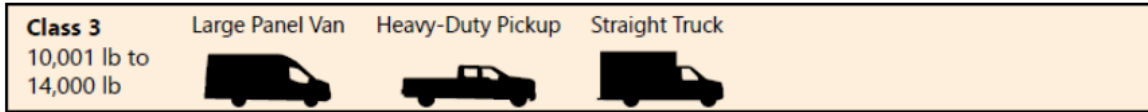
Appendices

Understanding Vehicle Weight Class

MEDIUM-DUTY WEIGHT CLASS

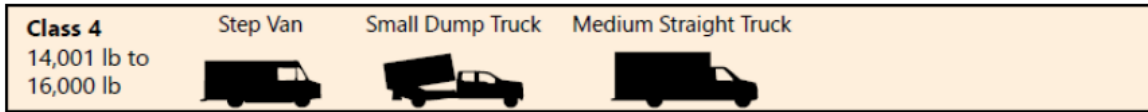
Weight class 3 vehicles have a gross vehicle weight rating between 10,001 pounds to 14,000 pounds.

Example Models: GMC Hummer EV, Navistar eStar, Workhorse C-Series Vehicles, and Chevy Silverado 3500 HD.



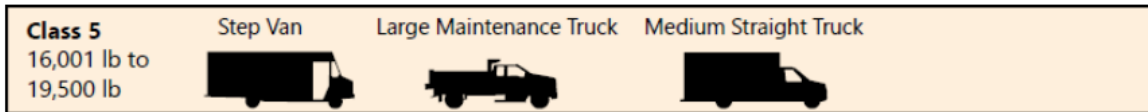
Weight class 4 vehicles have a gross vehicle weight rating between 14,001 pounds to 16,000 pounds.

Example Models: Cenntro City Porter and Ford F-450 Super Duty.



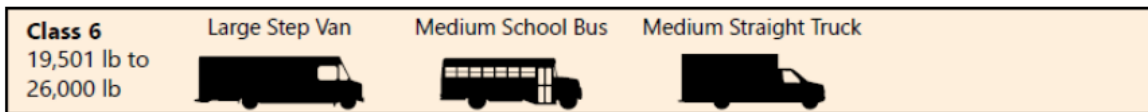
Weight class 5 vehicles have a gross vehicle weight rating between 16,001 pounds to 19,500 pounds.

Example Models: Chanje V8100 and Ford F-550.



Weight class 6 vehicles have a gross vehicle weight rating between 19,501 pounds to 26,000 pounds.

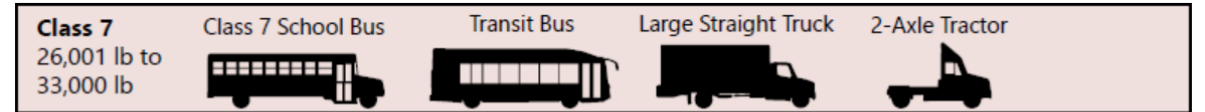
Example Models: BYD 6D Step Van, Xos SV, and U-Haul 26' Truck.



HEAVY-DUTY WEIGHT CLASS

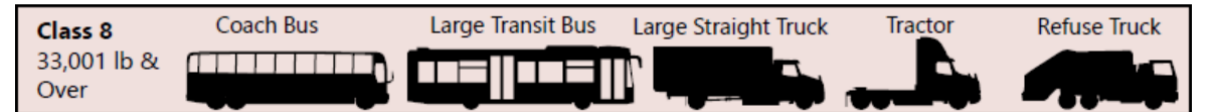
Weight class 7 vehicles have a gross vehicle weight rating between 26,001 pounds to 33,000 pounds.

Example Models: Freightliner eM2 108/106 and Blue Bird All American/All Canadian School Bus.



Weight class 8 vehicles have a gross vehicle weight rating of 33,001 pounds and greater.

Example Models: Volvo VNR Electric Tractor, Xos ET-One, New Flyer Xcelsior, and Proterra Catalyst.



Source: [CEC Medium- and Heavy-Duty Zero-Emission Vehicles in California Dashboard](#)

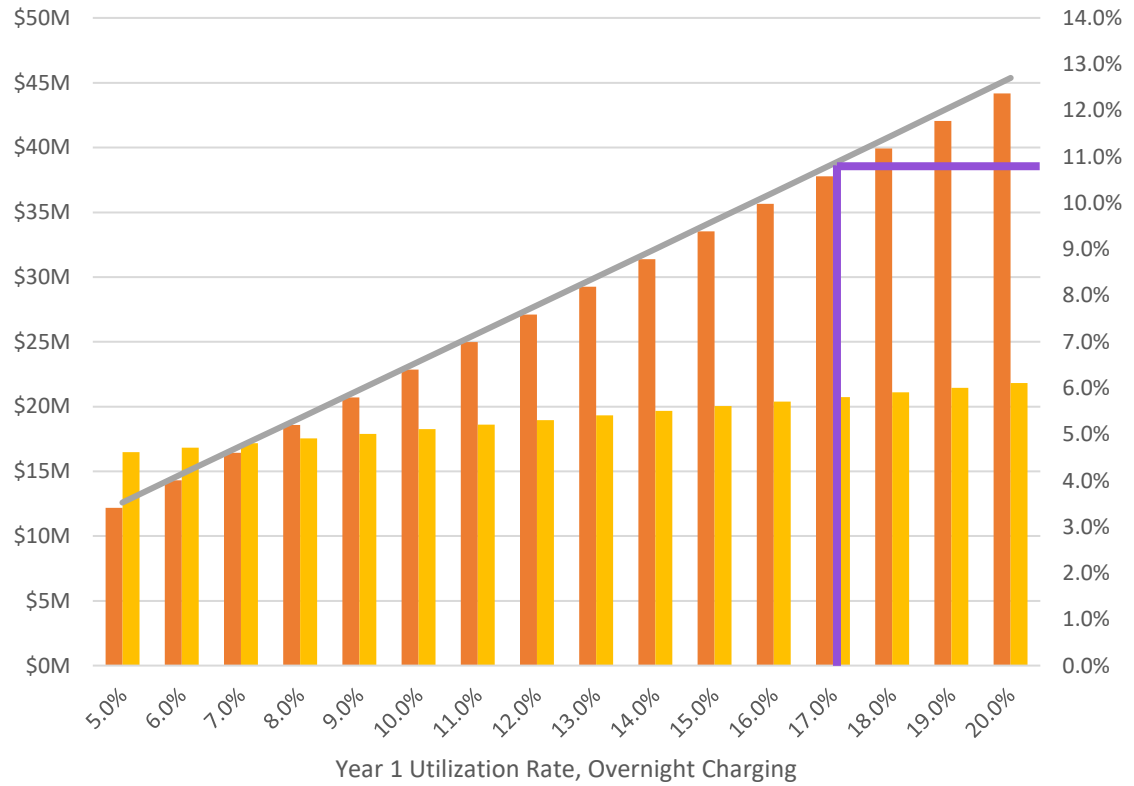
TEDF Baseline Forecast	TEDF AATE Scenario 3 (Policies <u>in Addition to the Baseline Forecast</u>)
<ul style="list-style-type: none">▪ Advanced Clean Trucks (ACT)▪ Commercial Clean Vehicle Tax Credit (IRS code 45W)▪ California Hybrid and Zero-Emission Truck & Bus Voucher Incentive Project (HVIP)▪ California Innovative Clean Transit (ICT)▪ California Electric School Bus▪ Commercial Harbor Craft (public transit ferryboats only)▪ California In-Use Locomotives (passenger trains only)	<ul style="list-style-type: none">▪ Advanced Clean Fleets (ACF)<ul style="list-style-type: none">➢ Fleet ZEV requirements➢ 100 percent ZEV sales 2036+

Source: [2023 Integrated Energy Policy Transportation Energy Demand Forecast Results, CEC, November 15, 2023](#)

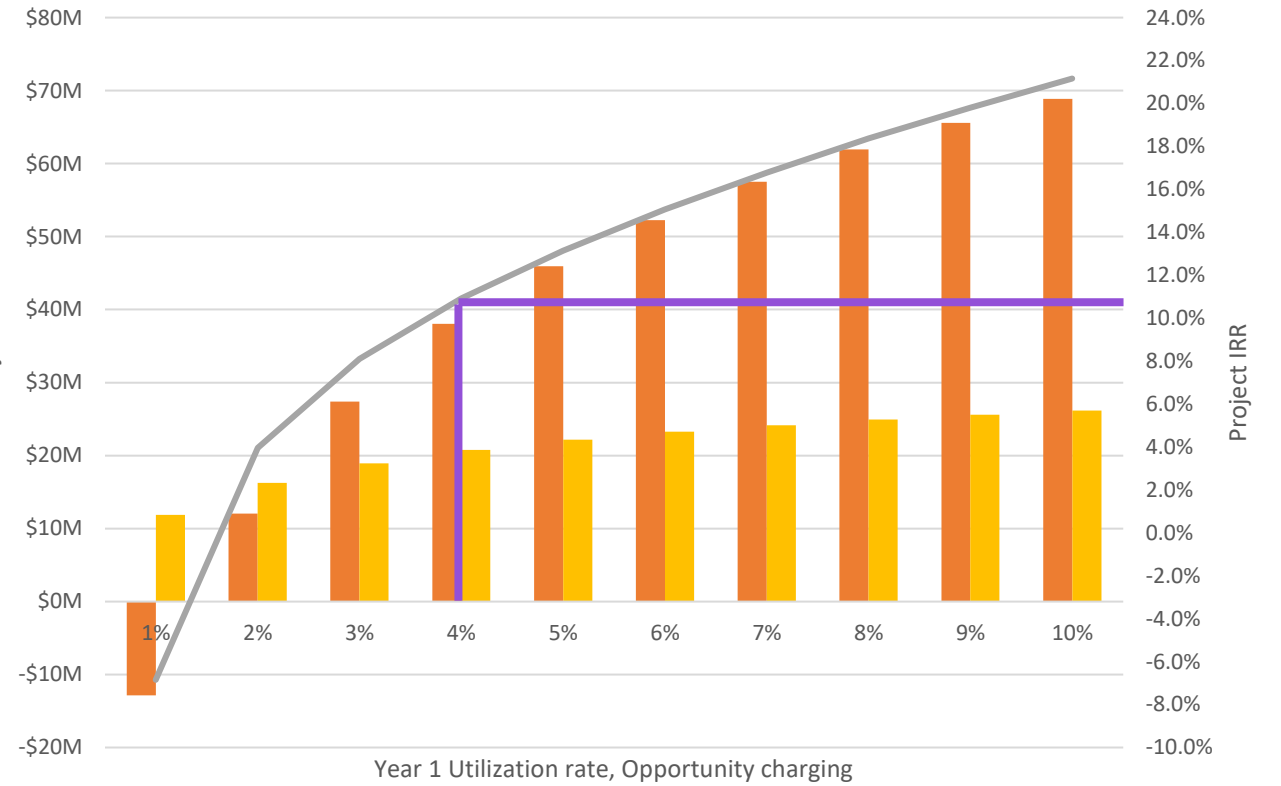
Sensitivity analysis – Utilization Rates

Utilization rates for opportunity chargers have a significant impact on project economics, while those for overnight chargers are less impactful.

Sensitivity Analysis - Year 1 Utilization rate, Overnight charging



Sensitivity Analysis - Year 1 Utilization rate, Opportunity charging



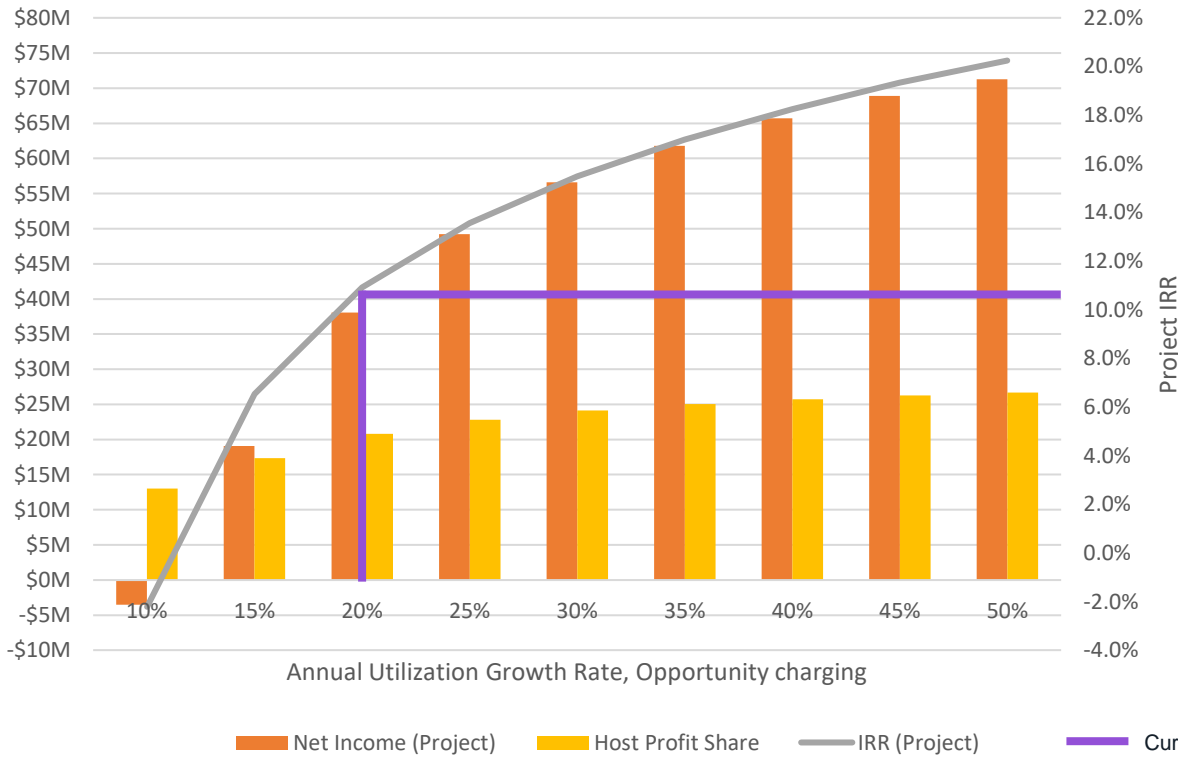
■ Net Income (Project)
 ■ Host Profit Share
 — IRR (Project)
 — Currently modeled values



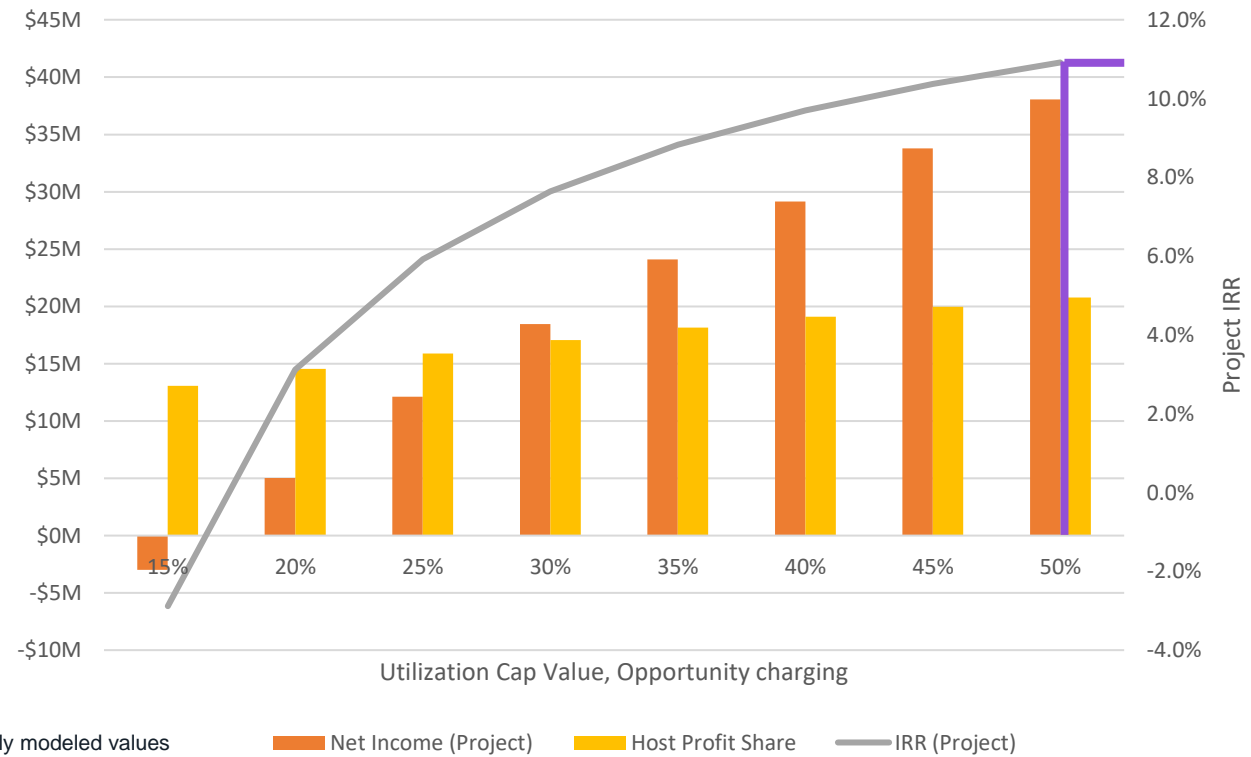
Sensitivity analysis – Utilization Growth & Cap

Annual Utilization Growth Rate is a key assumption with a significant impact of project economics
 Utilization Cap Value has a more modest impact on project economics, since this parameter only become more relevant in the project's later years.

Sensitivity Analysis - Annual Utilization Growth Rate, Opportunity charging



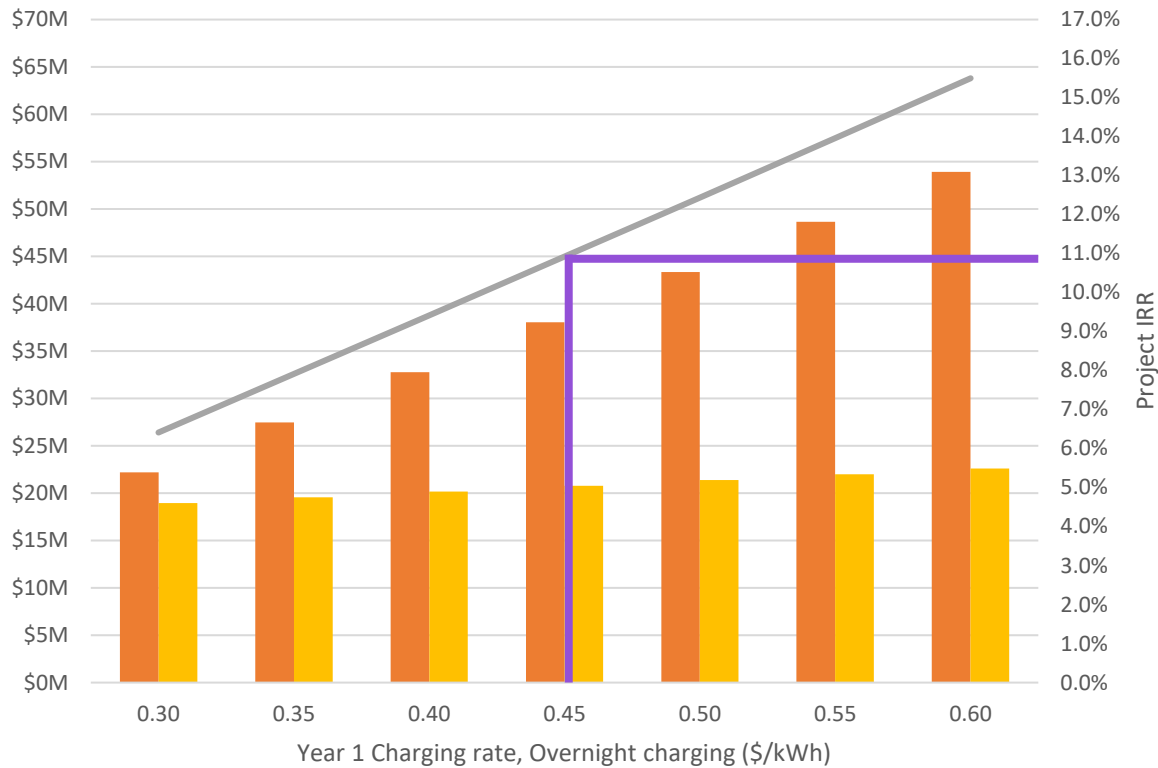
Sensitivity Analysis - Utilization Cap Value, Opportunity charging



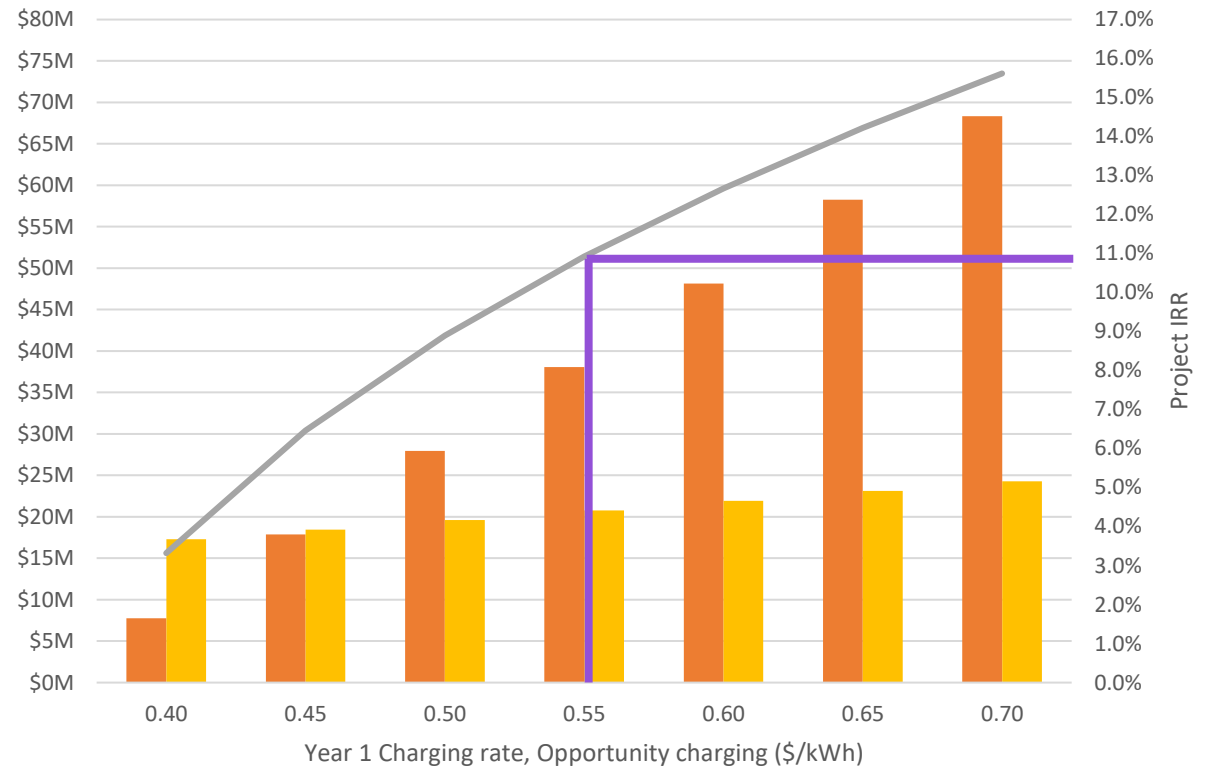
Sensitivity analysis – Charging Rates

Charging rates for opportunity & overnight charging have a similar, relatively important impact on project economics.

Sensitivity Analysis - Year 1 Charging rate, Overnight charging



Sensitivity Analysis - Year 1 Charging rate, Opportunity charging



■ Net Income (Project)
 ■ Host Profit Share
 — IRR (Project)
 | Currently modeled values