Stantec

THE FUTURE IS ELECTRIC

STATEMENT OF QUALIFICATIONS:
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE IN NORTH AMERICA

ADAPTING, PLANNING, ADOPTING, AND REDUCING THE CARBON FOOTPRINT

Electric Vehicles (EV) are an integral component of the smart mobility ecosystem that is poised to have an increasingly positive effect on climate change. The electrification of transportation will bring fundamental changes to our society, including how we design our roads, power grids, commercial buildings, and even our parking lots. But the most impactful change will be to our behaviors around personal travel. Refueling our vehicles will be something we do not once a week but every day. Most of the charging will happen at home, but a significant portion will also happen on streets, highways, and parking lots. Communities that adapt their planning strategies to take advantage of these changes, will be positioned for residents and businesses to adopt EV technology more quickly and gain an economic and environmental advantage.

WHO WE ARE

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always **design with community in mind.**

The Stantec community unites approximately 22,000 employees working in more than 350 locations across six continents. We collaborate across disciplines and industries to bring buildings, energy and resources, environmental, and infrastructure projects to life. We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

OUR CORE VALUES

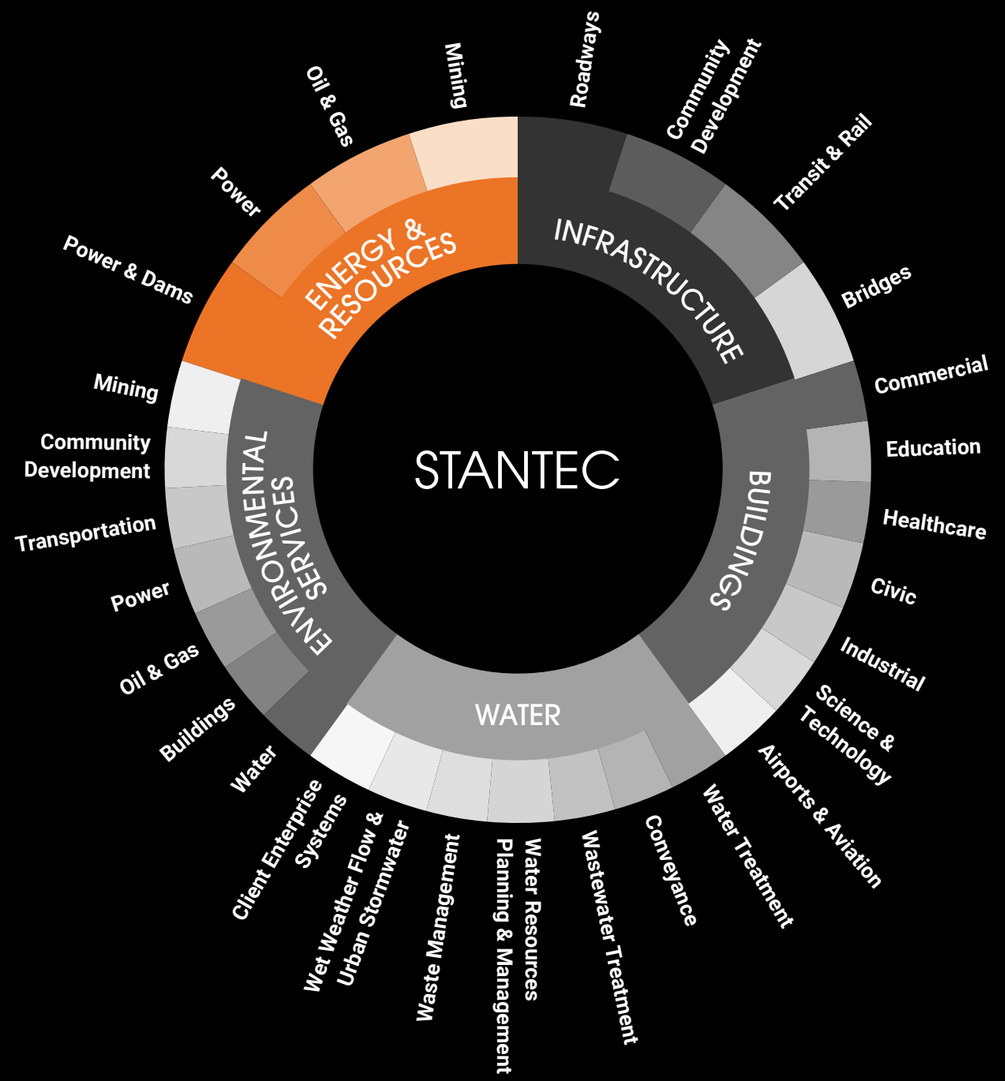
Our core values unite us as a firm: we put people first, we do what is right, we are better together, and we are driven to achieve. Our commitment to the health and safety of our people and to being ethical underpins our values and strengthens everything we do. We truly are better together; great things happen when smart people get together and are guided by their imagination and ambition to achieve real-world goals. We aim to support our clients at every stage their energy transition. Reducing air pollution by increasing the use of electronic vehicles requires a significant increase in charging infrastructure. Stantec is at the forefront of helping state agencies, transit agencies, and cities alike plan and design for the advent of zero-emission vehicles. Our approach involves using digital tools and space more effectively, reducing costs, and optimizing production flows.

#1
Top 150 Architecture Engineering Firms (BD&C)

#2
Top 40 Electrical Design Firms (EC&M)

7,000+
charging ports designed and/or assessed in North America

200+
ADA charging ports recently installed throughout California



SUSTAINABILITY

At Stantec, we know taking a sustainable approach isn't just smart practice, it's essential. We want our clients and communities well prepared for the long term and enabled to make smart environmental and social choices. We work with clients and communities as they progress solutions that embrace new technologies, renewable energy, and adapt to a low-carbon future—positioning themselves in a new energy reality.

Learn more about sustainability at Stantec here.

ENERGY TRANSITION

Although the evolution of energy sources is fundamental to the energy transition, there's more to it than that. Much more.

Explore 6 things we talk about—and one we don't—when we talk about the energy transition here.

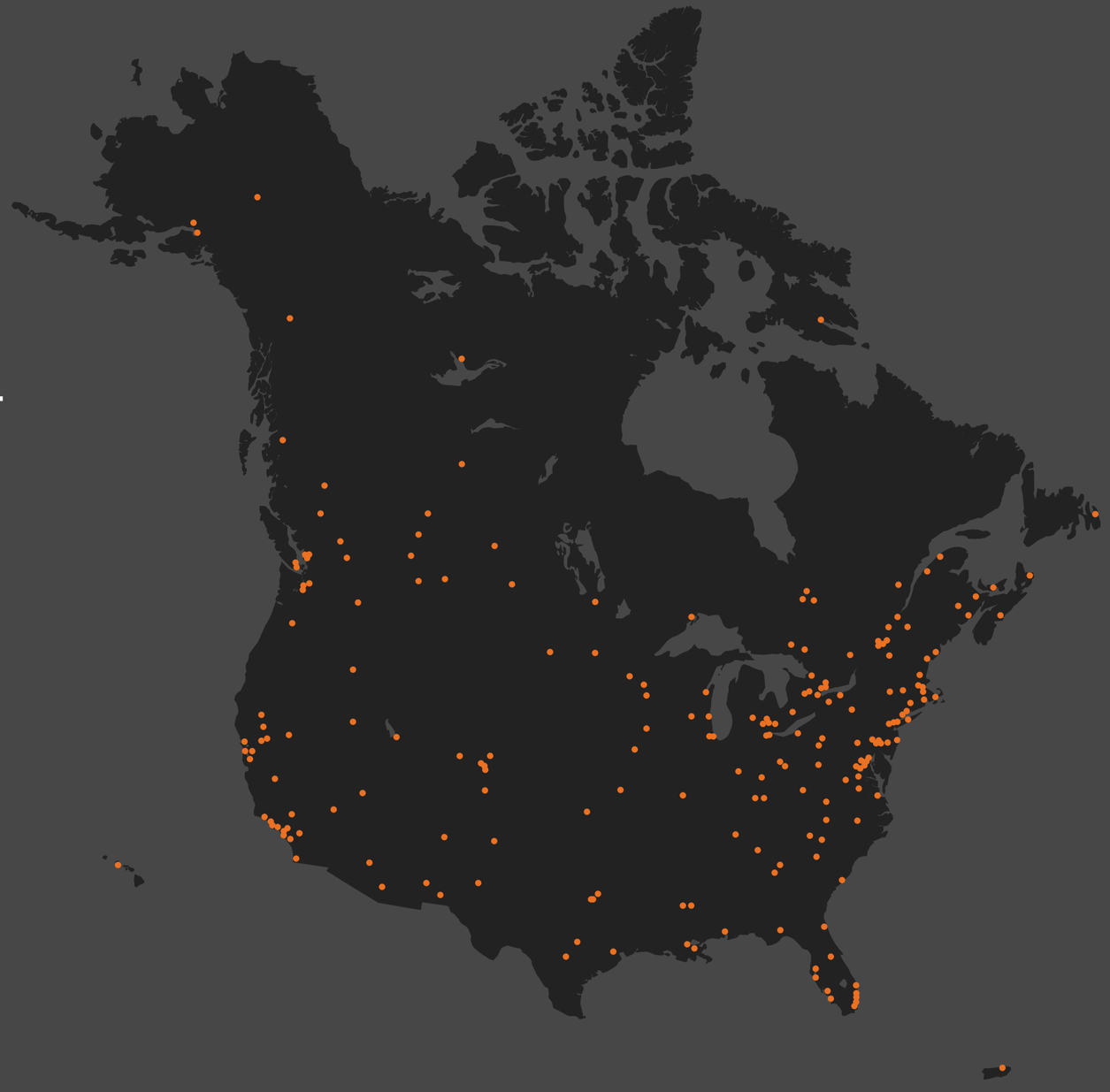
LOCAL DELIVERY, GLOBAL EXPERTISE

At Stantec, we strive to exceed your expectations by fully comprehending your needs, interpreting them in creative and cost-effective ways, and by providing superb service and responsive follow-up regardless of location. How do we achieve this? We start by leveraging the right staff at the right locations—driving lower-cost, higher quality, and more timely reporting to deliver best value services. Our integrated team of subject matter experts will provide the best of both worlds: global knowledge and understanding coupled with a local appreciation for your unique needs, resources, and constraints—informing the project's agenda from the start and delivering the advantage of local solutions.

16,380+
staff located in North America

230
offices within North America

6,560+
licensed PEs in North America and 4,715+ nationwide



PLANNING AND EXECUTION PROCESS

PROVIDING INTEGRATED SERVICES THROUGHOUT PROJECT LIFECYCLE

Stantec has a global design practice focused on creating better design at every scale. As a tightly integrated collection of engineers and designers—spanning scales, geographies, and disciplines—we balance insight and aesthetics to solve complex problems and find vibrant, meaningful, and high-performing solutions. We have proven that the most successful solutions are built on holistic thinking. We deeply believe that thoughtful understanding is critical to solving today's complex challenges. Whether partnering on a zero-emission vehicle or bus project, a microgrid, or a utility-scale solar or wind farm, we keep our clients at the forefront of a rapidly changing industry with innovative designs and flexible services that help to achieve their goals and find a competitive advantage.

Assessment Planning

EV Readiness Planning:
Prepare a long-term plan for implementing an EV Charging program; coordination with other initiatives, such as renewable energy programs or the use of Zero Emission Buses (ZEBs), to multiply the effect of the EV program

Fleet Transitions:
Develop a plan to transform your fleet from internal combustion engines to EVs, including functionality analysis, financing options, vehicle availability research, locating charging stations and logistics planning

Management and Advisory

Technical Guidance:
Develop specifications and requirements for the development of publicly available charging stations; access, charging capacity, technology compatibility, payment, mobile applications, GIS mapping

Financial/Funding Analysis:
Identify federal, state, and utility grant or loan programs to help facilitate the transition; look for potential revenue sources for publicly owned facilities

Infrastructure Design

Electrical Infrastructure:
Help ensure your electrical grid can handle the increasing power and energy requirements of a transition to electric vehicles

Detailed Site Design:
Civil and environmental permitting, traffic analysis, signing and striping, electrical and structural engineering

Logistics:
Locating EV charging stations to benefit drivers and businesses

Construction Support

Procurement Support:
RFI/RFP/RFQ Management, contractor qualification and selection, vendor/shop/field inspection, QA inspections, Logistics support

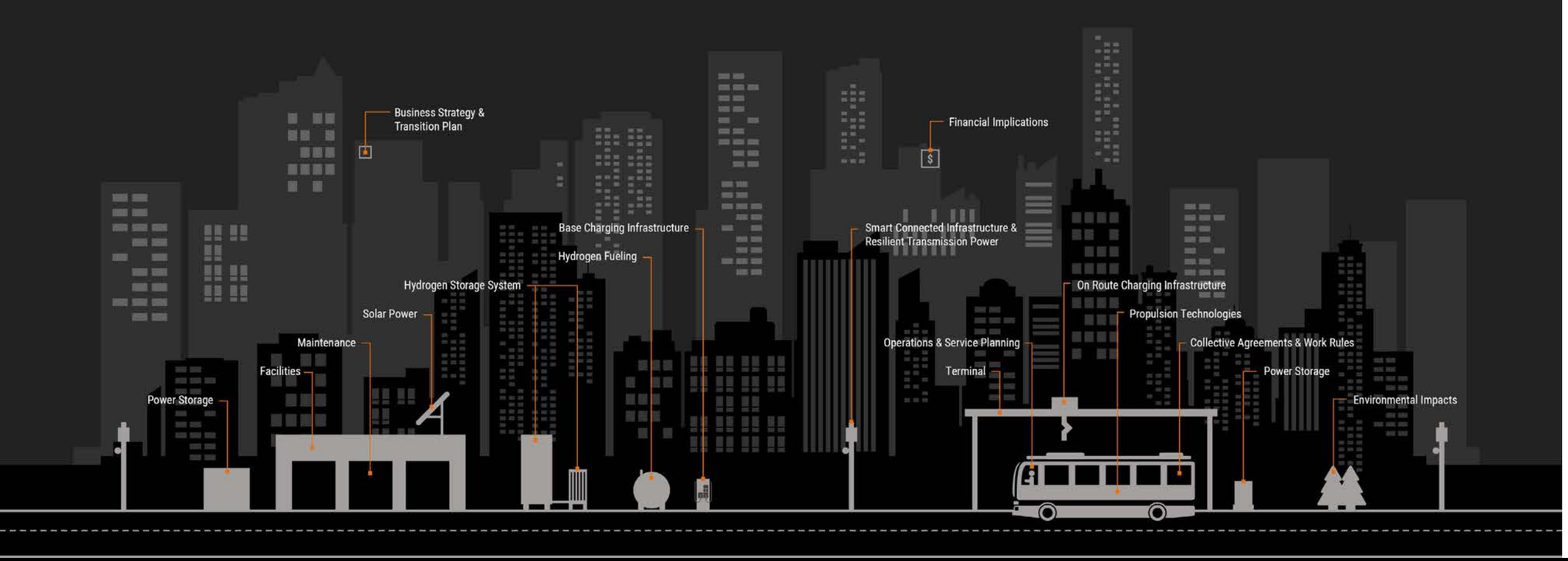
Construction:
Constructability reviews, construction oversight, schedule management, safety, construction contract management/ administration, construction RFI management, coordination of contractors, manage punch list, and change order management

Post Construction:
Record drawing development and project closeout

Social and Environmental

Education and Outreach:
Prepare tools and distribute information about programs and EV technology to improve community participation and adoption

Environmental Impacts:
Quantify the positive effects on air quality and climate change from the transition on both a personal and region-wide basis



"Installing more EV charging stations demands more space, more power, and more infrastructure. These requirements are producing several challenges for developers and utilities providers as the size and popularity of charging stations increase—especially as we move towards the mass electrification of public transit and fleet vehicles." - Mike Voll, Stantec Principal, Sector Lead Smart Technologies

Read subject matter experts Mike Voll and Wicus Postma's article about the future of EV charging infrastructure here.

TRANSCENDING CHALLENGES WITH INNOVATION

CHALLENGES

There is no one size fits all when it comes to implementing EV charging infrastructure. Our team is well-versed and experienced with considering challenges and finding flexible, fit-for-purpose solutions.

Power Source

Electrical service capacity plays a pivotal role in determining if a site can feasibly implement EV charging. Incorporating renewable power sources may improve the project feasibility.

Cost of Power

Utility rate structures and demand charges need to be considered as clients plan their EV infrastructure program.

Location

Proximity to the electrical power source, assigned parking spaces, public access, and permitting are among several factors that influence the location of EV charging spaces.

Accessibility

The Americans with Disabilities Act (ADA), federal, state, county, city, local laws, and client standards could impact the need for ADA charging spaces.

Permitting

As programs and projects span across many different Authority Having Jurisdictions (AHJs), it is important to understand the permitting requirements for each as this could impact the approval process.

Technology

Considering what type of charging station should be installed is key to helping ensure operational excellence.

OPPORTUNITIES

From initial infrastructure assessment to policy development to integration with existing land uses, our teams bring the right expertise to your project at the right time.

Microgrids

Our full suite of engineering and design services means we can provide all facets of microgrid design including studies, thermal generation, power delivery, renewable energy, and grid modernization.

Battery Storage/Solar Farms

Stantec is providing project development support for multiple battery energy storage system (BESS) and solar farm projects in North America. Our experts understand that a fully integrated system uses solar, battery storage, and microgrid controller technology to help effectively reduce the carbon footprint.

Combining EV Charging and Hydrogen

Our subject matter experts are at the forefront of technological advances in energy and participate in the growing global discussion that acknowledges hydrogen production and its potential application as an effective zero greenhouse gas (GHG) emissions energy source. Our experts, Nathan Ashcroft (specializing in clean technology and energy transition) and Pietro Di Zanno (specializing in hydrogen and petrochemical and refining process), actively discuss how we bring hydrogen to the forefront of energy transition initiatives.

Read Nathan and Pietro's article about hydrogen's place in the energy transition here.

INNOVATIVE SOLUTIONS

Stantec is also at the forefront of helping clients plan and design for the advent of zero-emission vehicles. We have developed digital tools, standards, and procedures that add value to your team. Our experts have the right insight into the accessibility compliance, parking function, and management needs of workplace and fleet applications. Through our project experience, we can apply many relevant lessons learned.

mTools™

mTOOLS is an assemblage of software applications designed to facilitate the collection, storage, and reporting of information. It configures customizable solutions on a project-by-project basis, with minimal labor required and at an affordable cost. These applications make repeatable activities easy to perform, while improving informational integrity and reporting efficiency and quality to stakeholders. Each application is created to satisfy a very specific information management function and designed to work in coordination with the other applications in our suite. As a result, our team assembles only the applications you need—resulting in a simple, intuitive solution without unnecessary functions. mTOOLS Hosted Solutions automates and improves all aspects of data collection, data analysis, and data reporting. Utilizing this software during an electrical assessment has historically saved $1,200 architectural and engineering (A&E) fee per electrical vehicle service equipment (EVSE) station/location.

ZEBDecide

To provide data-driven decision making for future ZEB fleets, Stantec uses a planning tool called ZEBDecide. This tool is composed of multiple modules allowing services tailored to your needs. The benefits of ZEBDecide include:

- Energy modeling to predict the performance of Battery Electric Buses (BEBs) and Hydrogen Fuel Cell Electric Buses (HFCEBs) per route and per operating block
- Projections of total fuel demand (electricity and hydrogen)
- Charging schedule for BEBs based on vehicle dispatching and blocking
- Provides hydrogen station specifications and power requirements
- Power requirements for each facility for the charging and hydrogen dispensing of BEBs and HFCEBs, respectively
- Cost optimization that helps determine the ideal proportion of each technology type in a fleet while minimizing the cost of ownership
- Rate modeling and energy fuel cost projections

Geomatics: Surveying and Mapping

Geomatics is the union of old and new. Traditional techniques are combined with state-of-the-art technology to collect, process, analyze, display, and manage spatial information. Whether it's recovering physical evidence in the field, interpreting old documents, or using the latest innovative software in our offices, we're equipped with the right mix of tools and expertise to guide you through projects of every size and scope. Having accurate and timely information is vital when exploring boundaries. At any stage of the project life cycle, we collect data and turn it into information that saves you time and costs. Our teams stake out reference points to guide construction, create 3D graphics to guide the design of transportation and infrastructure projects, and produce digital terrain maps that show what lies beneath the surface of water bodies. We answer the unique logistical and technical challenges of each project, and help you use this information to make informed decisions.

INDUSTRY LEADER

Our varied portfolio of national and international projects gives our team unique insight into EV infrastructure and technology as well as how important it is to understand communicating smart mobility concepts.

RECENT, NOTABLE PROJECTS

California Department of General Services (DGS), EVSE, Northern California

The transportation sector is the largest contributor of GHG emissions in California. Nearly half of California's emissions, and 80% of smog-forming pollutants, come from the State's transportation sector. In response, Governor Brown issued Executive Order B-16-2012. This order requires state entities facilitate rapid commercialization of zero-emission vehicles (ZEVs) and increase purchases of ZEVs to at least 25% by 2020—during the normal course of fleet replacement.

To support the Executive Order—and recognizing a need for change—DGS set out to dramatically decrease emissions and increase clean air. How? By bringing 250,000 vehicle-charging stations and 200 hydrogen-fueling stations to California by 2025. Stantec has supported DGS since 2016 by developing a series of EVSE projects throughout the Northern California region. The project involves due diligence site assessments at State-owned properties including prisons, remote fish and wildlife facilities, hospitals, DMV, Caltrans, CalVets and State-owned parking garages, and detailed design of the infrastructure. We are also supporting California fire marshal submittals, department of state architecture (DSA) and providing bidding and construction support.

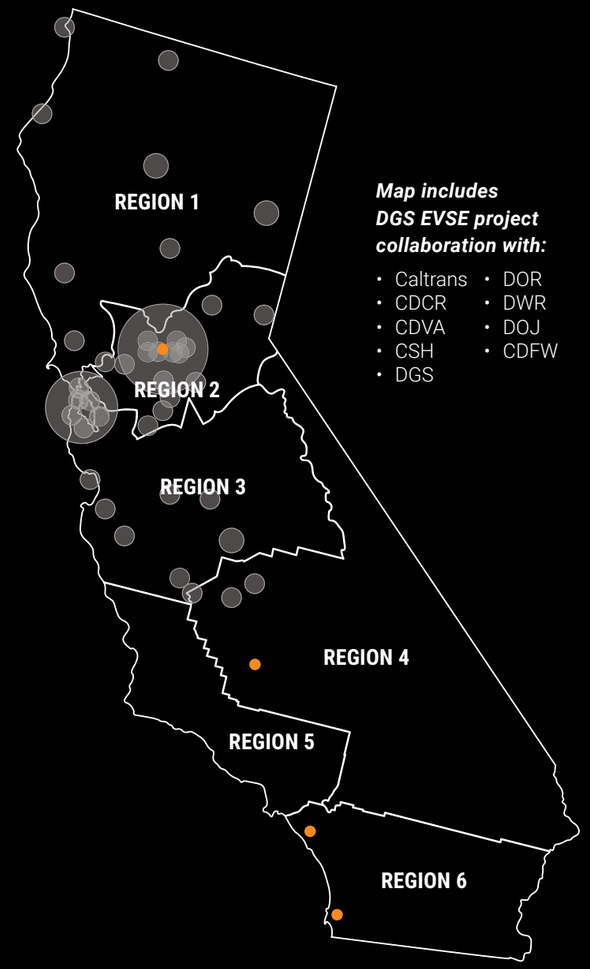
50+
building permits

40+
DSA approvals

600+
Level 1 EVSE constructed at 28 facilities

104+
Level 2 feasibility assessments

20
ADA designs



Marengo Garage Electronic Vehicle Charging Infrastructure Design, Pasadena, CA

The City of Pasadena hired Stantec and Greenlots to deliver a 20-stall charging station. Stantec designed and acquired plan check permitting for the project that Greenlots constructed. Immediately adjacent to the City's charging stations, Tesla delivered a neighboring station with an additional 24 stalls. Together, this is one of the largest Level 3 (480 volt) EV charging stations in the US. Level 3 fast chargers minimize charging time, getting drivers back on the road with a full charge in approximately 30 minutes.

The 44 new charging stations—including five ADA compliant charging spaces—sit atop a public parking structure across from the Paseo Colorado Mall at the City's center. The existing parking structure was upgraded for the structural loads this project required. Our team provided structural and electrical engineering for the project.

"Making available to the public a large-scale fast charging station was especially important to Pasadena Water and Power. We knew this would help advance EV adoption and give confidence to potential consumers that EV infrastructure was accessible and nearby to where they live or work. Stantec provided the design and support needed to ensure a coordinated and seamless construction phase. The resulting Marengo Charging Plaza will serve the community for many years to come." - Marvin Moon, Assistant General Manager of Power Delivery for Pasadena Water and Power

20

stall EV charging station installed

Large

One of the largest Direct Current (DC) fast charging station in the US

Confidential Ultra-Fast Charging Network Deployment, Canada

We are providing full engineering and permitting services for the rollout of more than 120 charging stations incorporating DC ultra-fast charging (120 kW - 250 kW) across Canada that will enable worry free coast-to-coast electric vehicle travel.

The Pegasus School - Modernization, Irvine, CA

Our team helped the Pegasus School modernize their campus by providing 20 EV charging stations and two ADA EV charging stations.

Santa Monica Big Blue Bus Charging Infrastructure, Santa Monica, CA

We are conducting a system-wide analysis of infrastructure and equipment needs. Stantec is evaluating the utility grid infrastructure and recommending charger locations as well as conducting analysis for yard layout and phasing.

Lucas Museum, Los Angeles, CA

Stantec served as the architect of record for this project. The museum, in addition to exhibition space, will hold 120 EV charging stations and 10 ADA EV charging stations. The $1.5 billion museum is expected to open in 2021.

Agreement for On-Call Electrical Engineering Services, County of Sacramento, CA

Stantec has provided electrical engineering services as part of an on-call contract with the Architectural Services Division for more than 20 years. Recent work involved 57 Level 2 stations, 10 Level 3 stations, two heavy truck stations, and 14 bus stations.

San Diego International Airport Terminal 2 Parking Plaza, San Diego, CA

We provided design-build services for this 924,200-square-foot, three-level, parking garage with 2,900 parking stalls—installing 16 dual EV charging stations to charge 32 EVs and 176 conduit provisions for 176 future EV charging stations.

BGIS Electrical Vehicle Charging Stations, Northern Ontario, Canada

Our team reviewed seven sites across Northern Ontario to provide conceptual design options and opinion of probable cost for the installation of new EVCS at each site. The EVCS are Level 2 charging stations with half power capability from the buildings.

MGAC Canada ULC Electrify Canada DC Fast Charging Stations, Numerous Provinces, Canada

MGAC, the program management team for the Canadian program, engaged Stantec as the engineer of record for 32 DC fast charging stations across Canada as part of the Volkswagen Clean Air violation settlement agreement with the US Department of Energy (DOE).

City of Rochester Plug-in Hybrid Electric Vehicle Charging Stations, Rochester, NY

We educated City representatives about available technology and explored all viable options. Our team developed the infrastructure design, parking lot modifications, and signage. All charging stations were connected via cellular signals to databases utilized for state assessments.

New York State Welcome Centers, Broome, Erie, Greene, Jefferson, Montgomery, Suffolk, and Warren Counties, NY

Free public EV charging stations were included at all seven welcome centers. Each welcome center has two Level 3 charging stations from one of two manufacturers. The charging stations typically add 40 miles of range for every 10 minutes of charging.

Crystal Cove Plug-In Hybrid Electric Vehicle Charging Stations, Newport Beach, CA

Implementing EV charging stations and the latest ADA standards, we helped modernize and improve pedestrian access to a popular coastal shopping center. We provided design and installation services of three EV charging stations, including one ADA charging station.

Bell Works Plug-In Hybrid EV Charging Stations, Holmdel, NJ

We provided 12 7.2kW dual port charge point CT4000 Level 2 commercial charging. We worked on this transformation since 2017. The project was an integral part of making the business center attractive to tenants and customers, as well as preparing it for the transition from internal combustion engines to EVs.

Golden Gate Bridge Highway and Transportation District ZEB Rollout Plan, San Francisco, CA

Stantec is providing an in-depth analysis of the District's four facilities and existing routes to determine the optimal fleet composition of BEBs and/or HFCEBs for the community. Once complete, the final ZEB rollout plan—informed by Stantec's ZEBDecide tool—will help devise priorities, key decision points, and other critical considerations.

Toronto Transit Commission (TTC) BEB Study Toronto, Ontario, Canada

We provided a technology review, utility connection assessment, and facility review to understand what it would take to support up to 20 BEBs with the potential of converting the entire garage (300+ buses). The analysis helped TTC make astute decisions about their ZEB program rollout; they have placed an order for 60 BEBs.

Explore our additional EV charging project experience here.

Read subject matter experts Mike Voll and Sasha Pejcic's article discussing how to plan for the future of electric vehicles here.

CONTACT US

Backed by a global network of industry experts and on-the-ground resources with a deep understanding of the local stakeholders, Stantec is uniquely positioned to add value to and help accomplish your project goals. We would welcome the opportunity to discuss what we can offer further as you begin to build your energy transition to zero-emissions vehicle fueling infrastructure.

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