

EV Infrastructure in Princeton  
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ANJEC 2018 Congress



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# Project

- Restricted to EV charging only
- Vehicle must be plugged in and charging to utilize the space
- Parking violation if a vehicle is in the space and not charging



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# Project

Sustainable Princeton worked with the Dept. of Public Works to identify a feasible location to install a Level 2 EV dual-port charging stations and determined that the Spring Street Garage was the best location.



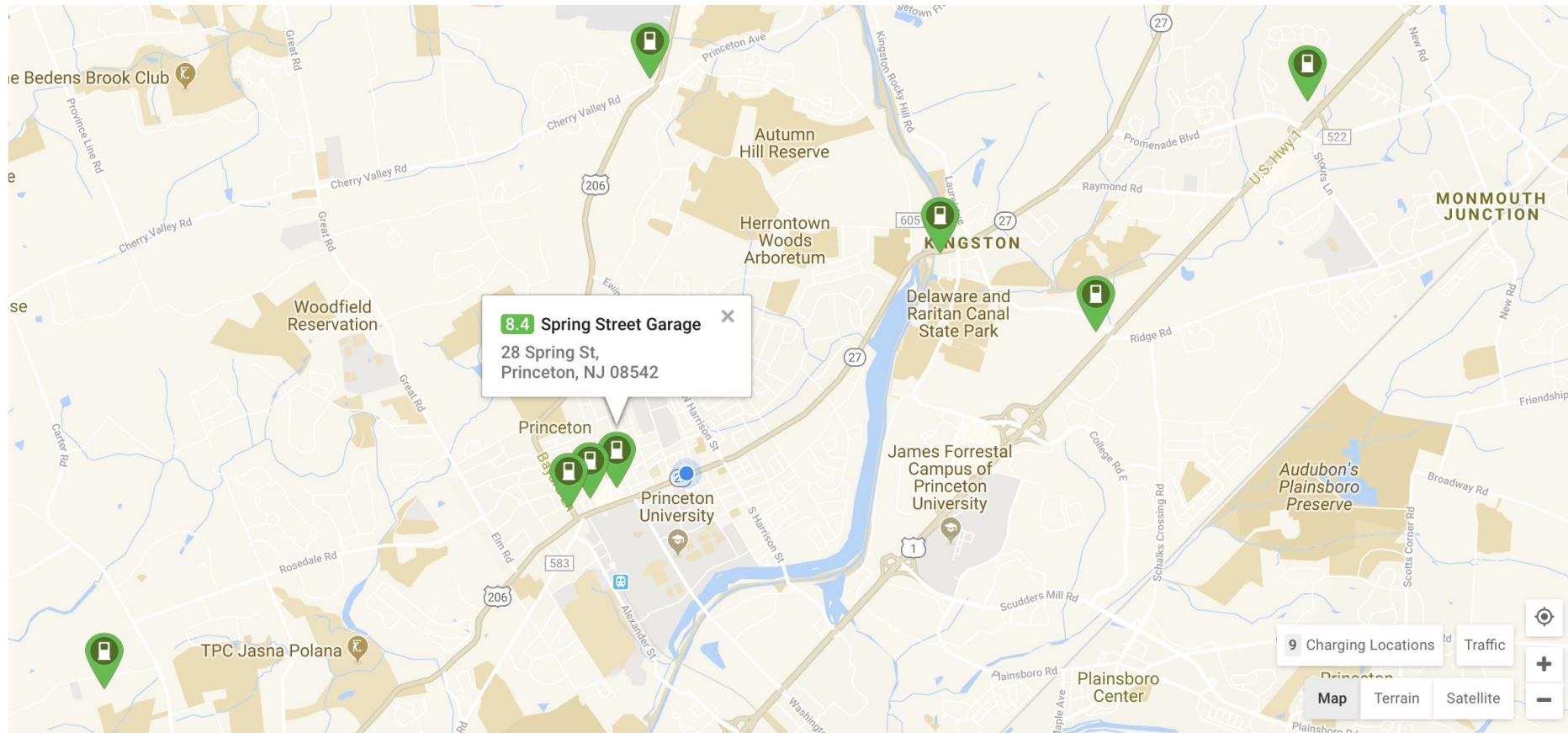
Level 2 Dual-Port ChargePoint, Inc. Smart Charger



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# Project



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via PlugShare

# Pitch

## **Reduce Greenhouse Gas Emissions (GHG)**

- Supporting the infrastructure of EV's is priority for reducing New Jersey's GHG emissions

## **Improve Local Air Quality**

## **Good for Business**

- Public parking spaces in business districts are target areas for EV charging stations "Charge while you shop & dine."

## **There is Demand**

- We know that there is demand from inquiries to garage attendants & drivers using outlets in Spring Street Garage

## **EV Sales Are Projected to Increase**

## **15 Sustainable Jersey Points**



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# Research

Dual Port Smart Charger*	
Equipment	\$7,500
Installation	\$8,000
Signage	\$500
Sustainable Princeton wages - project management, communications etc.	\$4,000
<b>Total</b>	<b>\$20,000</b>

\*A dual port smart charger provides:

- Ability to charge two vehicles in adjacent parking spaces
- On-site payment system
- Usage and energy reports
- Environmental benefit reports (CO<sub>2</sub> emissions averted)
- Cloud based network



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# Funding

Dual Port Smart Charger	Est. Budget	Funding Source
Equipment	\$7,500	Donation from BMW*
Installation	\$8,000	\$5,000 from NJ DEP grant, Public Works budget
Signage	\$500	Public Works budget
Sustainable Princeton wages - project management, communications etc.	\$4,000	Fee for Service arrangement between Municipality of Princeton and Sustainable Princeton
<b>Total</b>	<b>\$20,000</b>	

\*for hosting a Ride & Drive Event



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# Pricing

8:00 am – 11:59 am	
1 <sup>st</sup> hour	\$1.50/hour
2 <sup>nd</sup> hour	\$1.50/hour
3 <sup>rd</sup> hour	\$2.50/hour
4 <sup>th</sup> hour	\$2.50/hour
12:00 am – 7:59 am	
\$1.00/hour	

\*in addition to fees to park in garage

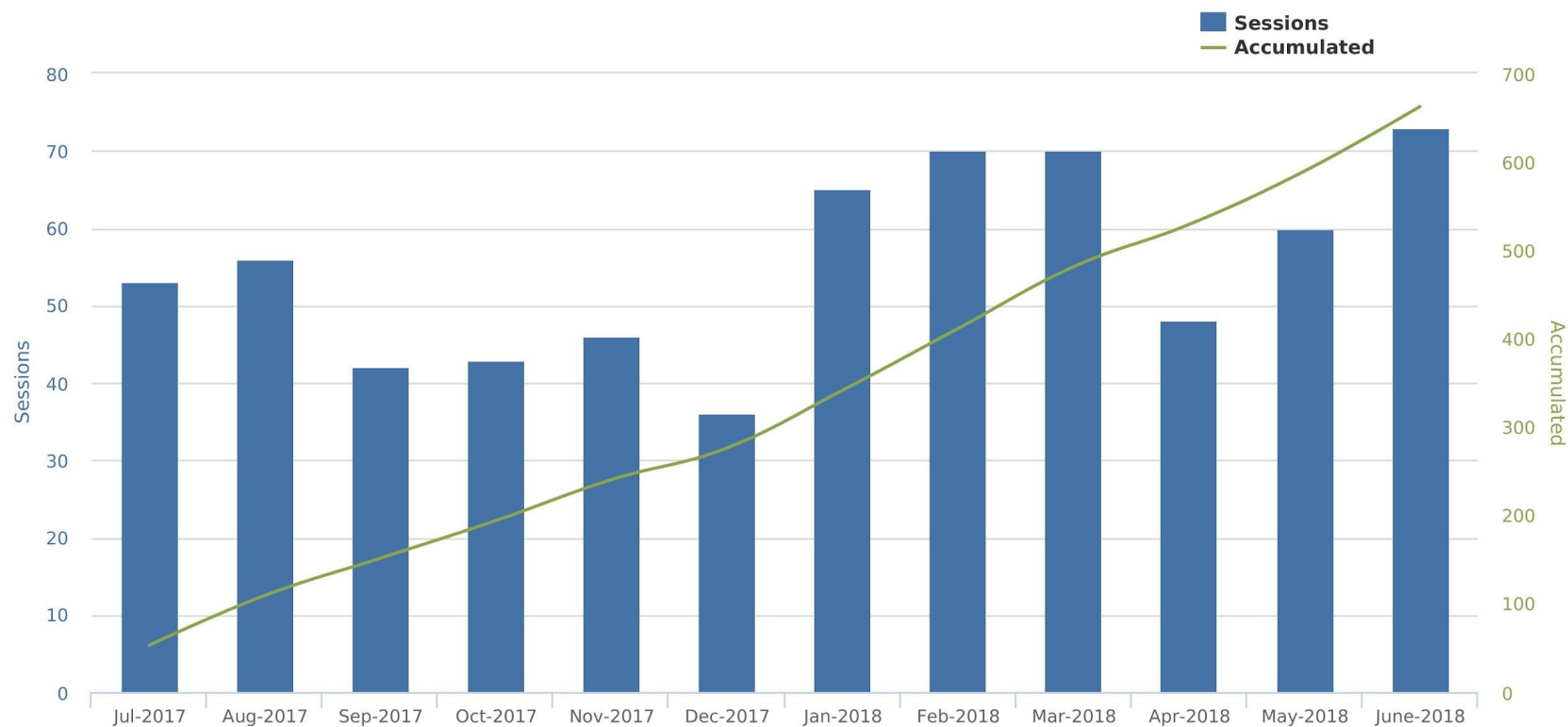


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# Monthly Usage in Princeton

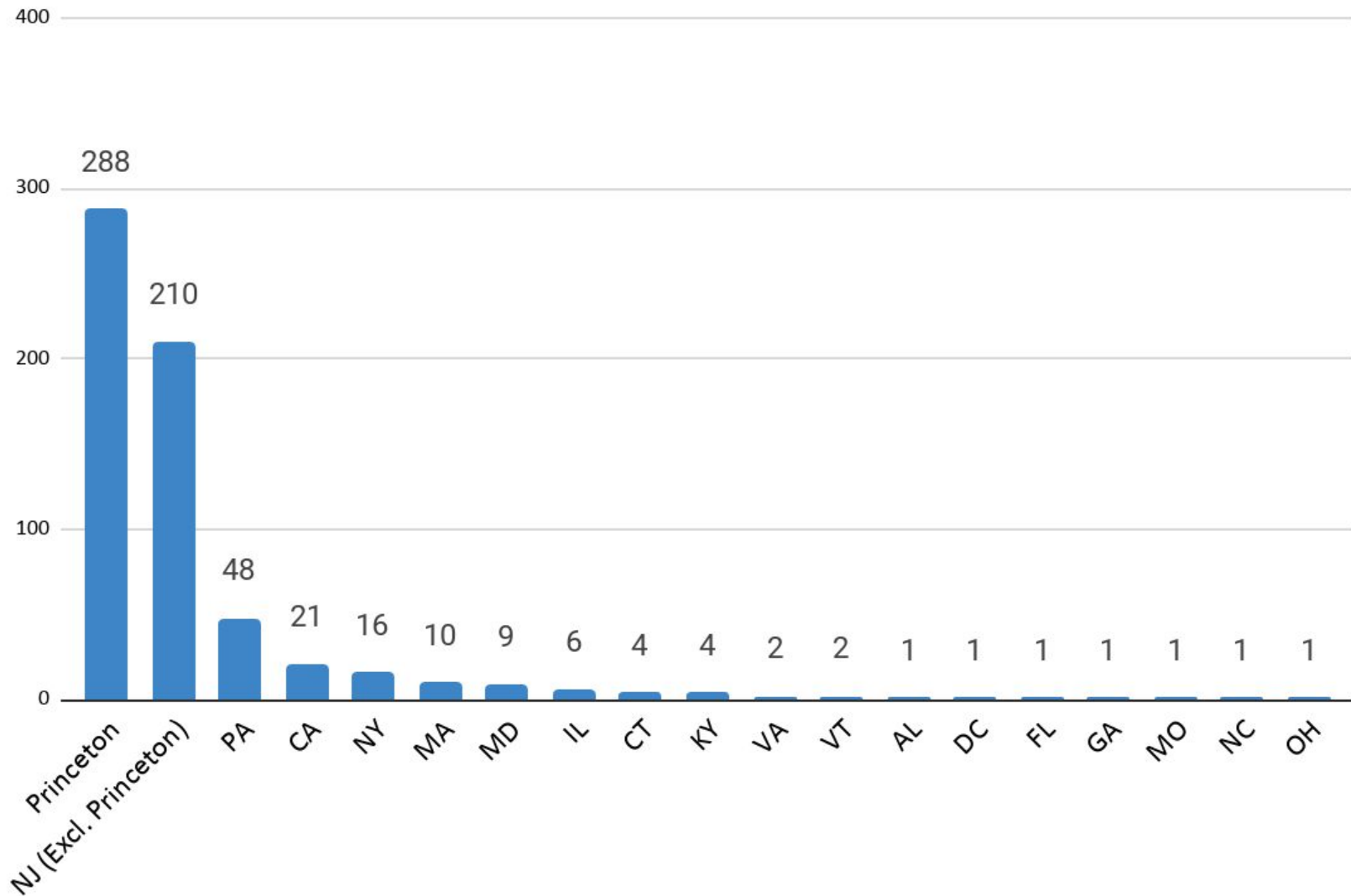


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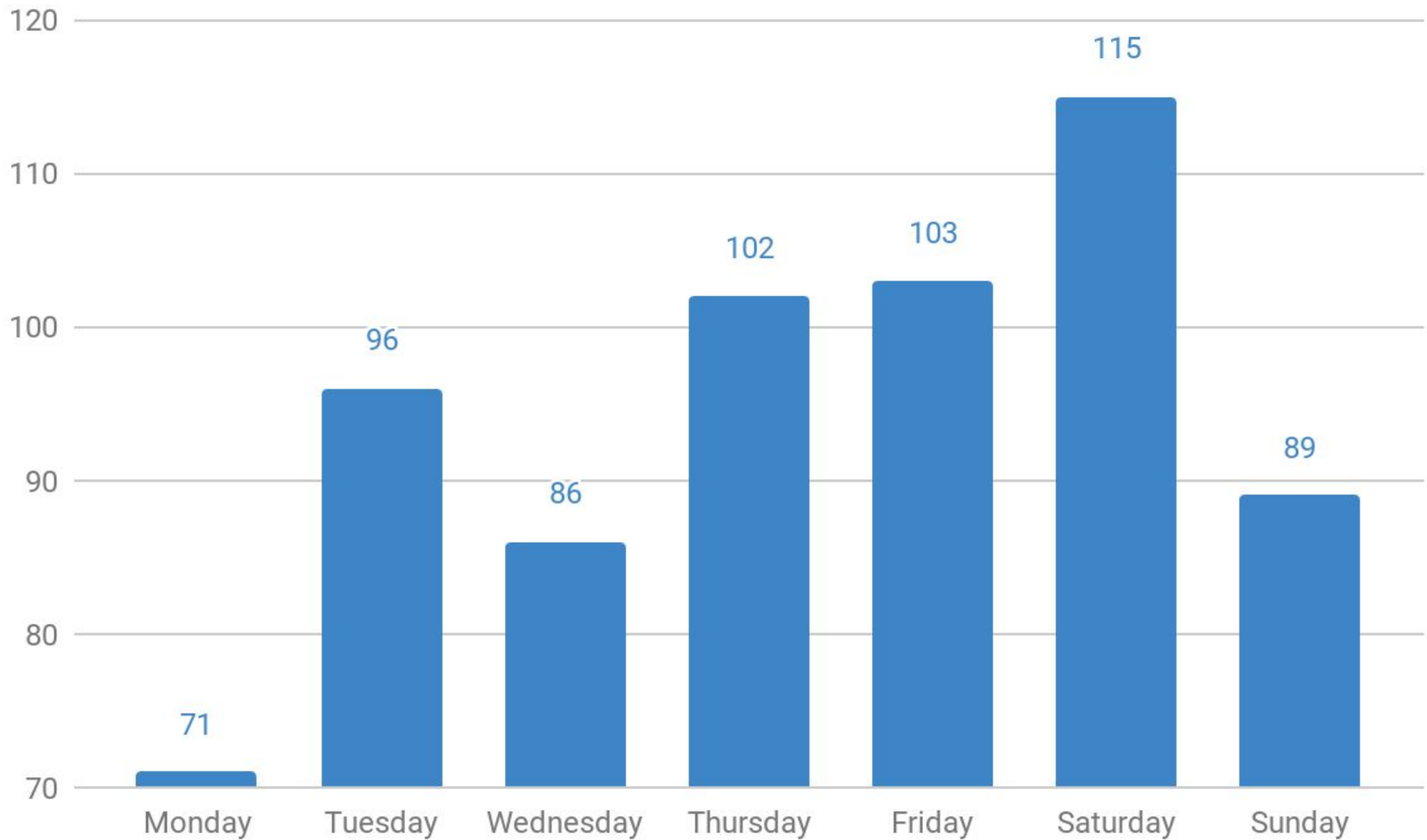
*Figures above based on data from 7/1/2017 to 6/30/2018*

# Charging Sessions by User Zip Code



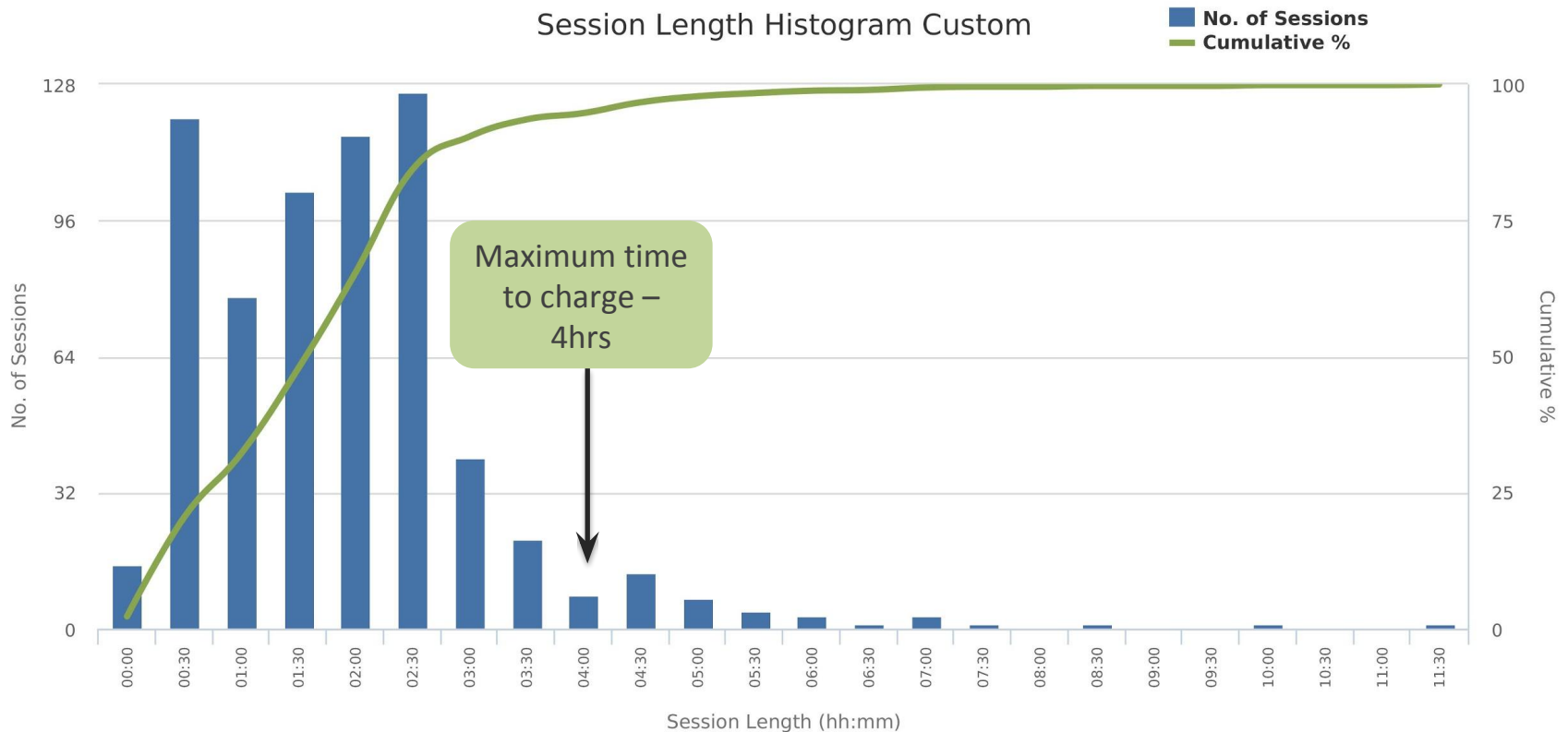
*Figures above based on data from 7/1/2017 to 6/30/2018*

## Distribution of charging time by day of week



*Figures above based on data from 7/1/2017 to 6/30/2018*

# The average session length is ~1.5 hours



**Average Session Length: 1 hr. 39 min.**  
**Users are generally adhering to 4hr limit**



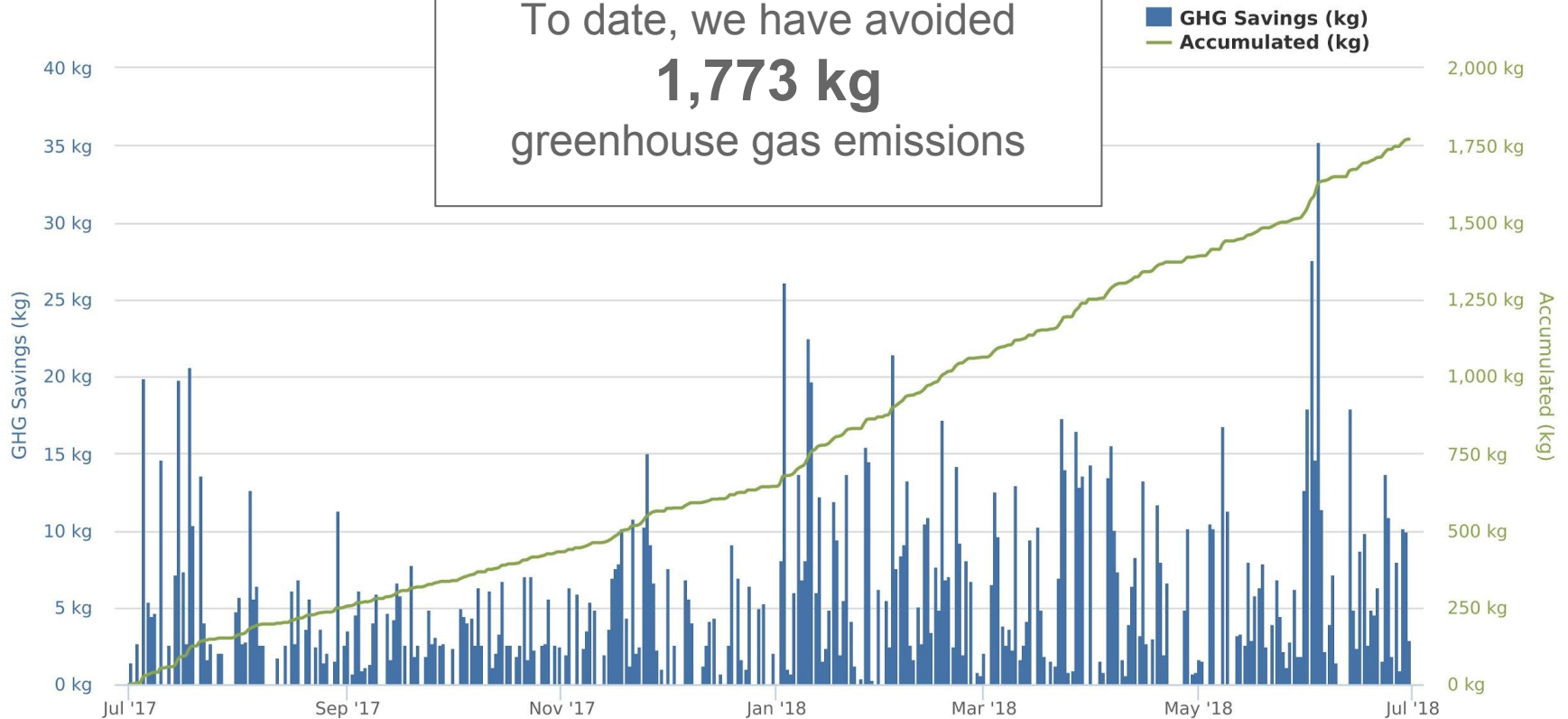
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*Figures above based on data from 7/1/2017 to 6/30/2018*

# Greenhouse Gas Savings

To date, we have avoided  
**1,773 kg**  
greenhouse gas emissions



That's like planting **46 tree seedlings**  
and letting them grow for 10 years



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*Figures above based on data from 7/1/2017 to 6/30/2018*



# The Municipality Is Covering Its Cost

## Net Revenue



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*Figures above based on data from 7/1/17 to 6/30/18*

# Questions to Anticipate

- Who will enforce restrictions?
- Who will be responsible for maintenance?
- Will the garage attendants have to learn how to operate the equipment if a driver needs help?
- Will the parking garage lose revenue if the spaces are restricted to EV charging only?
- What does the municipality have to charge for the service to cover its costs?



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# Lessons Learned

- Working with municipality's contracted electrician may mean they need to get trained and certified to install the station equipment provider.
- The type of equipment may require two 40 amp circuits to allow both ports to charge at 6.6 kW if were used at the same time.
- Be aware of the configurability of the EVSE software as it will determine the pricing options you have.
- Need to work with municipality's legal counsel to create or update ordinance to establish fees to charge and restricting to EV charging only
- Check cellular signal in a garage



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