



## Project Description - Davis Express Car Wash

November 8, 2021

### Proposed Project

The project proposes to develop an express car wash located at 480 Mace Blvd. The presently undeveloped 1.68-acre parcel would consist of a 140-foot-long conveyor wash tunnel, 21 vacuum bays, 8 parking spaces, 3 automated pay stations, a bike washing/repair station, 2 short term and 2 long term bike parking spaces, and 1 dog wash. The car wash building will be 5,758 square feet (7.8% of the lot) to house the car wash conveyor and equipment. The building will contain a 3,420 square foot tunnel; 1,287 square foot equipment room, 251 square foot office, 244 square foot vacuum producer room, 58 square foot restroom, and a 37 square foot mop/cleaning room. The car wash building will be 32 feet tall at its peak to help contain any noise generated by the dryer/blowers. The 3 automated pay stations will be covered by a 13' overhang to protect from direct sun exposure.

30,625 square feet (41.8%) of the lot will be covered by drought tolerant landscaping. This percentage significantly exceeds the 10% requirement cited in the Davis Municipal Code. 36,798 square feet will be heat reflective concrete paving (50.2%). The site will incorporate stormwater treatment bioretention planters, as required by City requirements.

The Project will make a significant commitment to solar PV energy. Currently, it is envisioned to place solar panels over all parking spaces and vacuum bays. Approximately 324 panels will be placed, producing an estimated 205,000 kWh per year, or approximately 20% of the project's annual electricity needs.

### Project Justification

An environmentally friendly, express car wash option currently does not exist in Davis. Cities of comparable size typically have 2 or more express car washes. For example, Woodland currently has 4 express car washes while West Sacramento has 2 express car washes. This results in Davis residents driving to nearby cities to meet their car washing needs. Sparkles Car Wash in Woodland estimates up to 40% of their clientele resides in Davis. With the limited options in Davis, many residents elect to wash their vehicle at home, resulting in significant water usage and untreated wash water ending up in our storm drains. According to the Mid-American Regional Council, washing a vehicle at home uses 116 gallons of fresh water on average. This practice is extremely damaging to the environment and has been prohibited in many municipalities across the country. According to a study by the City of Federal Way, Washington, at-home car washing in their city alone resulted in 190 gallons of gasoline, diesel fuel, and motor oil; 400 pounds of phosphorus and nitrogen; 60 pounds of ammonia; 2,200 pounds of surfactants; and 3,000 pounds of solid pollutants per year entering their storm drains untreated. These pollutants eventually enter nearby watersheds, contaminating our creeks, rivers, wetlands, and lakes.

Davis' current car wash offerings consist of 1 full-service car wash, 6 gas station car washes, and 3 manual car washes. These options fail to provide our community with an environmentally conscious car washing option. A typical full-service car wash uses between 75-125 gallons of water per vehicle. Davis' lone full-service car wash is dated and does not employ on site water reclaim and treatment. This means any water used on site ends up back in the sewer system and/or storm drains without treatment or recycling. Gas station and manual car washes use between 50-75 gallons of fresh water per vehicle. Due to their limitations on the volume of cars they can wash, many gas station and manual car washes do not use onsite water reclaim or treatment out of doubt they will recoup their investment.

In comparison, Davis Express Car Wash uses an average of less than 25 gallons of fresh water per car washed. Additionally, all water used on site (less evaporation) is captured, treated, and recycled using state of the art oil water separators and reverse osmosis equipment. This results in a significant reduction of water usage and helps protect our environment from harmful pollutants.

Davis Express Car Wash aims to provide a quick, high quality, and environmentally friendly car washing experience that the community currently lacks. While there are several gas station and manual car washes in Davis, they fail to meet the community's car washing needs. This is due to their inability to quickly handle the volume of vehicles requiring their service. For example, the average gas station car wash takes 10 minutes or more per vehicle and can only wash a single vehicle at a time. A typical manual car wash takes upwards of 15 minutes per vehicle. With 5 vehicles in line (common during peak times), idle wait times can exceed 1 hour during peak hours. In comparison, Davis Express Car Wash's average wash time is less than 3 minutes per vehicle. Additionally, the tunnel can facilitate up to 10 vehicles at a time. With 3 automated pay terminals, this results in an average of 5 minutes per vehicle from site arrival to wash completion. Furthermore, Davis Express Car Wash provides a more thorough wash and dry experience, resulting in less frequent car washing and significantly lowering water consumption.

Car Wash Types and Average Water Usage			
	Fresh Water Use in Gallons	Water Recapture %	Recycled Water Use %
At Home	116	0%	0
Gas Station	50-75	0-50%	0-50%
Full Service	75-125	0-91% <sup>1,2</sup>	0-75% <sup>2</sup>
Davis Express Car Wash	22.2	91% <sup>1</sup>	75% <sup>1,3</sup>

1. Approximately 6 gallons of water per wash is lost to evaporation

2. Davis' only full-service car wash does not use recapture or recycled water

3. Additional recycled water will be used for landscaping outside of wash

## Operations

With no express car washes in Davis, we feel it beneficial to provide a description of the process from site arrival to wash completion. A guest enters the site and signage guides them to the stacking area. Upon arrival at the pay terminals, the guest can select their wash package. The automated gates open after each payment is complete, allowing only one car at a time to enter the drive thru. The vehicle is then guided by the tunnel attendant on to the conveyor. The attendant ensures the vehicle is engaged on the conveyor and informs the guest to place their vehicle in neutral. The conveyor then guides the vehicle through the tunnel while automated manifolds apply biodegradable soaps and detergents, all electric brushes remove dirt and debris, and high-pressure spray nozzles rinse the vehicle. Sensors inside the tunnel determine the size and speed of the vehicle, ensuring the equipment is not running when no vehicle is present. After the vehicle is rinsed, the conveyor brings the vehicle to a section of quiet blow dryers that remove excess water from the vehicle. The vehicle then exits the tunnel, and the guest can decide to use a vacuum for their interior or leave the site at that time. On average, the process takes 5 minutes from when the vehicle pulls on site to wash completion. The tunnel conveyor can facilitate up to 14 vehicles at a time, with approximately a 10 second gap between vehicles. This provides a significantly lower idle wait time for vehicles when compared to typical drive-thrus. The average guest spends approximately 10-15 minutes vacuuming their car's interior. Taking into account the speed the tunnel can complete the washing process, the site necessitates the 21 vacuum stalls to ensure guests have an open stall to pull into and avoid on site congestion.

Additionally, the 3 automated pay stations and stacking areas facilitate rapid loading speeds, eliminating idle wait times and possible vehicle overflow off of the site. As recommended by Fehr & Peers, three automated pay stations that merge into a single drive-thru will avoid stacking onto Mace Boulevard. Similar establishments observed by Fehr & Peers show up to 15 vehicles queued from the point of sale and therefore, even if the three pay station lanes were reduced to two stations, it could result in vehicle stacking on Mace Boulevard.

The link below provides a brief video explanation of the express car wash model and highlights many features that will be used at Davis Express Car Wash. The architect of the car wash featured in the video also designed Davis Express Car Wash.

[Express Car Wash Experience: https://www.youtube.com/watch?v= egRUrldWw](https://www.youtube.com/watch?v= egRUrldWw)

Hours of operation: Summer hours 7am - 7pm, Winter hours 8am - 6pm

Staffing: 4 staff members at peak times. One pay station attendant, one conveyor attendant/guide, one vacuum area attendant, one site manager.

Peak hours: Saturday and Sunday 10am - 2pm, Monday - Friday 11am - 2pm

We project 450 cars washed per day on average. Saturday and Sundays are projected to be the busiest days of the week with an estimated 600 cars washed per day. The car wash will offer 3 wash packages as well as an unlimited monthly membership program. The monthly membership allows guests unlimited car washes for a set monthly fee. Site analytics performed

by National Carwash Solutions (NCS), an industry leading equipment manufacturer, estimated 18% of car washes in the first year of operation would be monthly members. This number increases to 31% by year 2 and 40% by year 3. The monthly membership also expedites transaction time at pay terminals with the use of license plate recognition technology. Additionally, most car wash guests will be Davis residents. NCS site analytics estimates over 95% of guests will reside within a 5-mile radius.

### Sustainability Features

A primary objective of Davis Express Car Wash is to be the most sustainable, and environmentally friendly car wash in the country. Below are some key features that will help to achieve this goal.

- The car wash will be the first WaterSaver car wash in Davis, certified by the International Car Wash Association. To earn this certification, the car wash will:
  - Use no more than 40 gallons of fresh water per vehicle. Davis Express Car Wash will exceed this standard by using less than 25 gallons of fresh water on average per vehicle.
  - Route all discharge to a water treatment facility. This will eliminate harmful pollutants from reaching storm drains.
  - Install and maintain a backflow prevention device on all potable water sources on site.
  - Use spray nozzles with maximum water efficiency and inspect all nozzles annually.
  - Keep water-saving devices at original or improved specification.
  - Re-use spot-free reverse osmosis concentrate in the wash process.
  - Utilize state of the art water reclaim and treatment equipment. This will allow approximately 91% of water used for car washing to be reclaimed, treated, and reused on site for future washing and landscaping.
- The Project will comply with Cal Green Tier 1
- Concrete paving, in lieu of asphalt, will be used on the entirety of the site which helps to reduce the heat island effect due to the higher solar reflectance by its ability to absorb heat.
- Stormwater treatment facilities to include a combination of bioretention planters.
- 324 solar PV panels are anticipated, which is capable of producing 205,000 kWh per year.
- Landscaping irrigation will comply with the City's Water Conservation Ordinance and California's Model Water Efficient Landscape Ordinance (MWELO).
- The project will be all electric, i.e., no natural gas.
- Provide 2 EV charging stations.
- All soaps and detergents used are 100% biodegradable.

## Noise Study/Site Layout

A noise study was completed to help inform the layout of the site and is included as part of this application. A 7-foot-tall masonry fence will be located along the eastern perimeter of the site adjacent to the existing residential housing which is consistent with the mitigation delineated in the noise study results of the proposed project. In addition, the following site measures have also been incorporated into the design of the site and are intended to help mitigate the noise impacts of the project:

- Car wash stacking/queuing will be located on the west side of the tunnel (parallel to Mace Blvd) to provide additional separation and sound mitigation to the residential property located to the east of parcel.
- Car wash tunnel will have 12-foot-wide by 14-foot-tall openings facing north and south. These minimal openings will limit noise leaving the tunnel as well as direct it away from the residential parcel east of site.
- All compressors, vacuum producers, and vacuum separators will be enclosed to mitigate sound. All enclosures will be lined with acoustic dampening material
- The car wash tunnel will be lined with sound dampening material to aid in noise abatement.
- The car wash utilizes a state-of-the-art, quiet drying system. The dryers will be located no less than 5 feet from the tunnel exit and blower motors will utilize the building's north tower, creating additional distance from the tunnel exit.

## Architecture

The buildings are single story and the building heights are considerate of the existing adjacent residential developments. The architectural style incorporates elements from the existing surrounding commercial buildings including the 7/11 gas station to the north, Starbucks Coffee to the west and the recently remodeled McDonald's located on Chiles Road. These elements include high quality, wood look finishes as well as gray and dark gray exterior colors. The car wash building is approximately 5,758 square feet and 32 feet tall at its highest point.

## Site Features

The proposed project includes a self-service bike washing/repair station, an enclosed self-service dog wash area and an employee break area adjacent to the dog wash area. The water for the bike wash and dog wash will be designed to capture, treat and recycle the runoff into the same system that is utilized for the car wash. The dog wash area will be enclosed with a wrought iron fence and an overhead fabric shade structure. The hours available for use of the bike wash / repair station and the dog wash area will coincide with the operating hours of the car wash. As mentioned above, the employee break area will consist of a concrete picnic style bench with an umbrella for shade.

## Site Design

The preliminary civil engineering design includes a new 2" water service connection off of Mace Boulevard. The fire hydrant backflow preventer and fire water service are located off of Mace Boulevard. The 6" sewer service will connect to a new manhole on the existing public sewer located within the existing Public Utility Easement (PUE) on the adjacent property to the north of the site. The site will be graded to convey the stormwater runoff towards the two bioretention planters to be located on the southern end of the site which will connect to 8" drainage pipes onsite which will ultimately connect to a 12" drainage service connection from Cowell Boulevard.

The preliminary landscape architecture design includes a mix of trees, shrubs and other native / drought tolerant plantings to complement the design of the Project site. The combination of carports with overhead PVs and tree shading will be utilized to meet the City's 50% parking lot shade requirement. Please refer to the preliminary landscape plan for the parking lot shade calculations.

There are two trees on the site. The tree near Mace Boulevard (in the northwest quadrant of the property) is a honeylocust and is intended to be removed, which is also recommended by the arborist report and evaluation of the health of the tree. Along the eastern perimeter of the site a small valley oak tree is located very close to the existing fence line and is intended to be preserved based on the recommendations in the arborist report. The trees to the east within the property of the adjacent residential housing site overhang onto this Project site and the arborist's evaluation provides pruning recommendations. The site to the north at 4810 Chiles Road is responsible for the existing trees on their property.

## Community Outreach

Outreach to surrounding community members will be held at a future date to be determined.

## Circulation and Parking

Vehicle access to the site is provided on both Mace Blvd and Cowell Blvd. Vehicular circulation is proposed to accommodate all turning movements off Cowell. The turning movements off Mace Boulevard are restricted to be right-in and right-out only (signage exiting the site onto Mace Boulevard will include a right-turn only sign). The vehicular entrance to the site from Mace Boulevard is placed immediately across from the existing median on Mace which will deter drivers from making any illegal left turning movements in or out of the site. As recommended by Fehr & Peers, the signalized intersection at Mace Blvd and Cowell should be modified to allow southbound traffic on Mace Boulevard to make a U-turn at the signal to access the site from Mace Boulevard.

## Physical Features / Surrounding Neighborhoods

The project site currently consists of undeveloped / vacant land. The site is located south of the existing Subway and 7/11 gas station and west of existing El Macero Village multi-family residential development. The existing El Macero Shopping Center (Nugget Market and Starbucks) and the City of Davis Fire Station No.3 are located on the opposite side of Mace Boulevard to the west of the site. Some existing office buildings and single family residential is located on the opposite side of Cowell Boulevard to the south of the site.

## Anticipated Entitlements

The anticipated entitlement applications for this project include:

1. Mitigated negative declaration
2. Site Plan / Design Review
3. Conditional Use Permit
4. Signage Permit – proposed monument sign to be located on Mace Boulevard just south of the vehicular access as indicated on the preliminary site plan. There will also be four signs on the building which will adhere to the Davis City Wide Sign Guidelines.

The proposed development of a car wash is consistent with the existing zoning and land use designations and therefore supports the envisioned development to support this area of the City and surrounding existing features.

## Resources

- City of Federal Way, Washington – Residential Car Washwater Monitoring Study  
<https://www.carwash.org/docs/default-source/watersavers-pdfs/2009-fw-car-wash-water-monitoring-study.pdf>
- International Car Wash Association - WaterSavers  
<https://www.carwash.org/watersavers>
- Auto Laundry News – Water Usage and Reclaim Systems  
<http://www.carwashmag.com/issues/march-2013/water-treatment.cfm>
- EPA – Mid-American Regional Council  
[https://cfpub.epa.gov/npstbx/files/KSMO\\_CarWashing.pdf](https://cfpub.epa.gov/npstbx/files/KSMO_CarWashing.pdf)
- SFGate – Water Restrictions by County  
<https://www.msn.com/en-us/news/us/bay-area-drought-see-the-water-restrictions-in-your-county/ar-AALti4Q>