

# Charge Up Appalachia

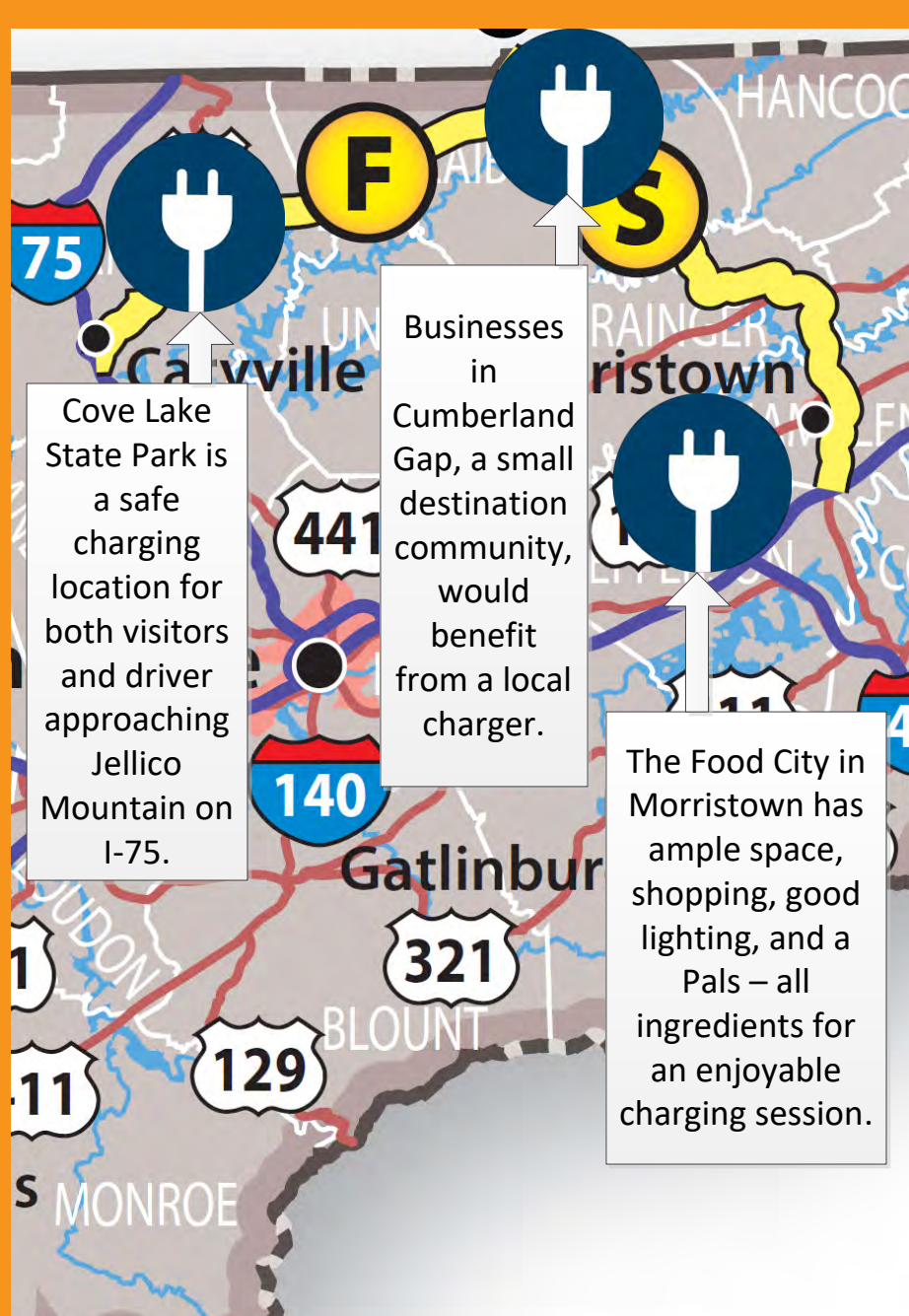
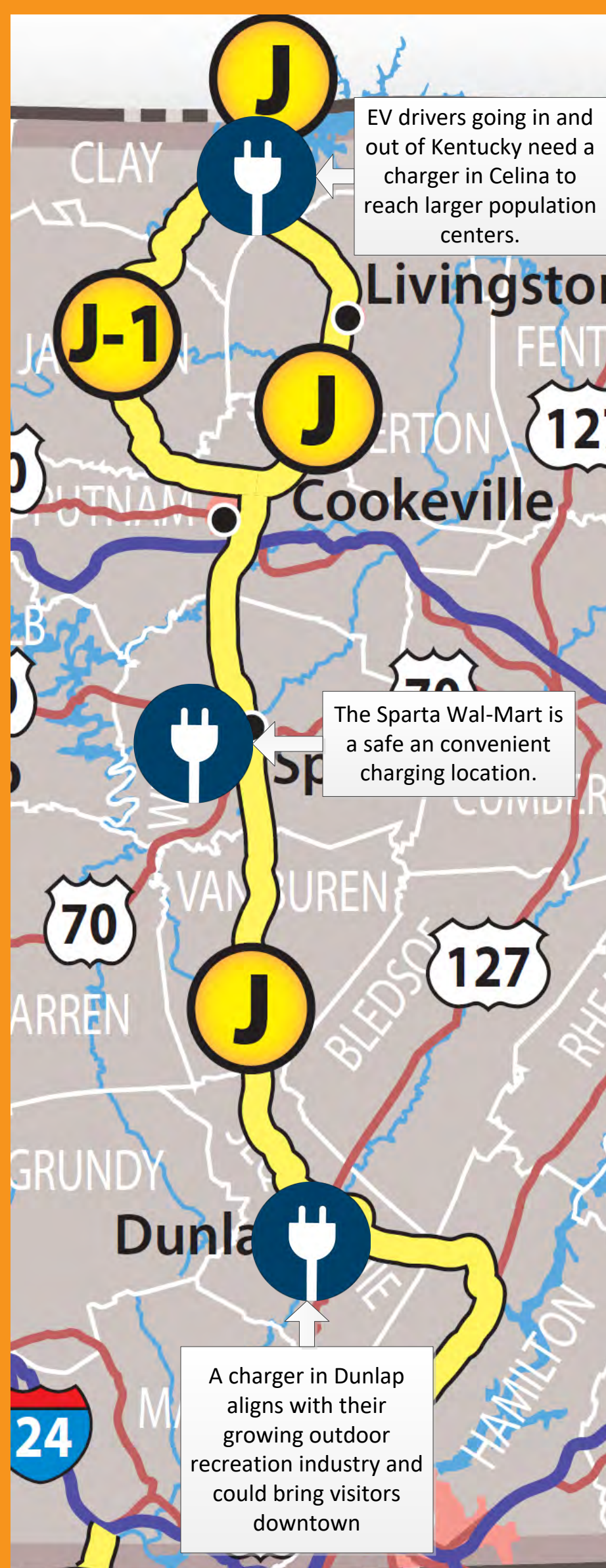
## Strategies to Improve Electric Vehicle Infrastructure Along Tennessee's ADHS Corridors

### Our Project

Tennessee recently announced it's fourth EV assembly plant and is rapidly becoming the leading EV manufacturing state in the nation. Despite this fact, much of the state lags in EV infrastructure. In an effort to improve this issue, the state's Department of Environment and Conservation (TDEC) recently partnered with the Tennessee Valley Authority (TVA) and Drive Electric Tennessee to install fast chargers across the state. Our class joined this effort by creating EV infrastructure plans for three of Tennessee's Appalachian Development Highway System (ADHS) corridors: J, F, and S. These roads, built by the Appalachian Regional Commission (ARC), are designed to promote access and economic development in rural Appalachian communities. Our class hopes that by expanding EV infrastructure to these areas, we will help and achieve these goals while promoting sustainable and equitable transportation for both visitors and local residents.



Tennessee's Appalachian Development Highway System Corridors. Our study focused on Corridors J, F, and S.



### Our Surveys

Our class conducted two surveys as part of our project research: an EV perception survey and a survey of EV Owners. Our perception survey, distributed across Tennessee's Appalachian counties found that while many drivers are intrigued by EVs, they lack reliable information about electric cars. Our findings include the following:

- About 55% of Non-EV drivers said they would consider purchasing or leasing an EV in the future.
- The most common reasons for considering an EV were gas savings, less pollution, and less maintenance.
- About 45% of respondents stated they would not consider an EV in the future.
- The most common reasons they cited were range concerns, costs, and the lack of chargers.
- Among non-EV drivers, 16% had driven an EV and 27% had ridden in one.
- Respondents who knew an EV owner were more than twice as likely to consider one for themselves.
- 78% of non-EV owners who drove an EV would consider buying one.
- 70% of people who had ridden in an EV would consider purchasing one in the future.
- Only about a third of respondents in rural areas or small towns know someone with an EV.

We also found that disinformation and misinformation was an issue with many respondents. Examples include the following:

- More than 40% of respondents think most EV owners need to replace their main batteries every five or six years.
- Almost 30% of respondents believed EVs cannot tow or carry heavy loads.
- About 10% of respondents believe EV's are unreliable and worse for the environment.
- Some respondents expressed beliefs that EV batteries go into landfills and that EV adoption would overwhelm the US power grid.

Our EV Drivers survey found that drivers liked to be near local amenities while charging:

- 93% want to be near places to eat.
- 92% want access to a restroom.
- 68% want a coffee shop.
- 53% want Wi-Fi access.
- 54% want a convenience store.
- 52% want to be near a shopping venue.
- 48% would like a local attraction or visitors center.
- Others want picnic areas (40%), a walking path (46%), a playground or park (34%), or a dog park (26%).

### Our Field Research

After evaluating potential charging sites along all three routes using Google Earth and PlugShare (an online EV charger locator), students drove the length of all three corridors within Tennessee. The student teams traveled in EVs (a Tesla Model 3 and a Chevrolet Bolt) to test the feasibility of EV travel along the roads. Along the way, students assessed potential and existing charging sites. They also met with stakeholders in communities along all three corridors, including local officials, venue operators, businesses, and other travelers – including other EV drivers. These conversations confirmed survey findings – residents across Appalachian Tennessee are interested in electric vehicles but want and need more information.



Meeting with Dunlap mayor Clint Huth



Ending our Corridor J drive at the state line above Celina, Tennessee.



Getting ready for Corridor S after an overnight charge in Middlesboro, Kentucky



Talking about EV chargers with mayor Pucciarelli in Cumberland Gap.

### Our Conclusions

- EV chargers have the potential to promote economic activity in Appalachian Communities.
- Station builders need to be more aware of access, safety, and diverse needs.
- Chargers should align with local plans, strategies, and priorities.
- Including rural areas in the EV transition will help promote rural parity in transportation and access.

