

TE Tuesdays: Arizona Clean Transportation Pathways

May 24 Webinar presented by Western Resource Advocates

Q&A Overview

Q: What work is being done to transition our energy grid [to renewable energy] as a state? The transition to EV vehicles is only beneficial if that shift happens simultaneously. Where are we with this shift?

A: We looked at the commitments to coal retirement for each of the utilities in Arizona which are modeled according to the data made public by Arizona utilities. We looked at the IRPs for the utilities and what they have planned- those plans only go out to 2035 and this modeling goes out until 2050 so we don't have full utility plans for the entire scope of the study. What we did is that we used a variety of different sources, mostly the NREL's annual technology baseline and EIA's annual energy outlook, to predict future prices. The model is an optimization problem- so the model optimized (minimized) the cost of the system going forward, using this information.

Q: Energy and electricity are not equivalents, so even though we would see a decrease in overall energy use with a rapid EV transition, we would still see an increase in electric grid usage, correct? How do we address grid upgrades to manage higher electricity demand?

A: This is all part of the model's optimization. It knows the demand requirements and builds the cheapest infrastructure to meet those needs, given the constraints of what is possible. This includes generation, transmission, storage and other technologies to ensure that the grid can handle the increase in electric load.

Q: Are grid updates included in the modeling study?

A: Electricity grid updates are reflected in this study- that is part of the total cost that is accounted for; both generation, transmission, storage and other system upgrades. The model builds additional transmission connecting Arizona to other states as well as a substantial amount of generation. All of that is included in the model optimization.

Q: Building transmission sounds expensive. Is the price of building transmission included in those scenarios? If it is, is it still that much more expensive to not take any action [on transportation electrification]?

A: Yes, and we actually had to limit the model for how much transmission we would allow it to build because it wanted to build a lot more than was realistic. We realized, "oh, hold on a second, this doesn't make any sense" so we scaled it back and put a limit on how much transmission we would allow the model to build, particularly between Arizona and California, which was the big one. We tried to be realistic with those numbers but the model consistently, in each of the scenarios, I think in all of the scenarios, built those transmission pathways, even in the no transportation action I believe it still built that transmission. We wanted to make sure that when we released a modeling study like this that it was defensible and realistic, so we added certain constraints to make sure that it was realistic.

Q: What is the difference between HD short-haul and HD- long-haul? Is it mileage based or time in vehicle?

A:

Aaron: It's a matter of mileage- heavy duty long-haul is like the 18-wheelers that travel hundreds of miles on a daily basis to transport goods either across the region or the country. Whereas heavy duty short haul is the same type of vehicle, it's just not traveling as much. Maybe it's just travelling around the City of Phoenix or just driving around a port or something like that- it's got a much lower mileage requirement.

Alex: I think of the short haul vehicles as school busses and things like that, whereas the long-haul vehicles are more like the 18-wheelers that are driving across the country.

Q: Car manufacturers say they are phasing out internal combustion engine (ICE) vehicles. Does the “No Transportation Action” scenario consider the commitment of vehicle manufacturers to reduce internal combustion engine vehicle production? Did you model the “market” based approach to EV adoption? Some in AZ think we can get to a 2050 goal just using the marketplace. Can we?

A:

Alex: That's a tough question.

Aaron: the modelers did not fully capture all of that information. In any modelling exercise capturing a “no action” scenario is a folly endeavor because something is always happening. It's difficult to model that but I assume that that probably wasn't captured.

To answer the question about whether the market can get there, I think if you add up the commitments from the manufacturers, they don't get to where we need to be. I would also say that the reason manufacturers have made those commitments is [in response to policy direction](#) not just from the U.S., but also Europe and China. The reason that those manufacturers are saying “Hey, we're going to be all EV by 2030” it's not because they wanted to do that because they wanted to, it's because they were told to do that in other places and I think it's important to think about that when we're thinking about “the market”. The market is driven by policy and truly always has been in automotive manufacturing space.

Alex: I think the causalities are hard to sift out there.

Aaron: it is, but there's definitely a relationship.

Q: Are any of the states that have adopted the zero emissions rule a majority republican or at least “purple” state like Arizona?

A: For the zero-emission vehicle standard, yes, there are some “purple” states that have adopted this. There are a number of states that have either currently or recently had mixed leadership, I would say, and I think that's reflected particularly in the states that have recently adopted, Virginia, Minnesota, Colorado, Nevada. I think while a portion of the leadership in that state is democratic, all of those have recently or right now have part of their leadership as republican. And those are the last 4 states that have adopted!