
Off-grid, Mobile, PV System For life on the road

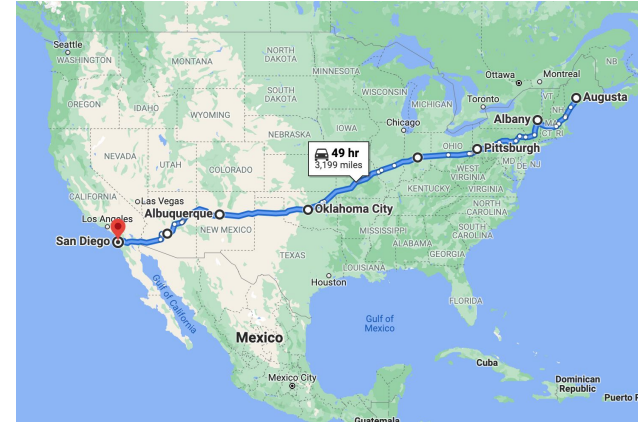
A python-based trip-planning utility

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18-883, Autumn 2021



System Certainty

- Yields results for best case scenario
 - Given panel characteristics and accurate irradiance data, charge times reflect optimal conditions per month
- Mapping of route to coordinates to state data is consistent and accurate
- Useful for comparing charge times between seasons
- Modular code: can use on any google maps route, any specified panel, and any battery you choose



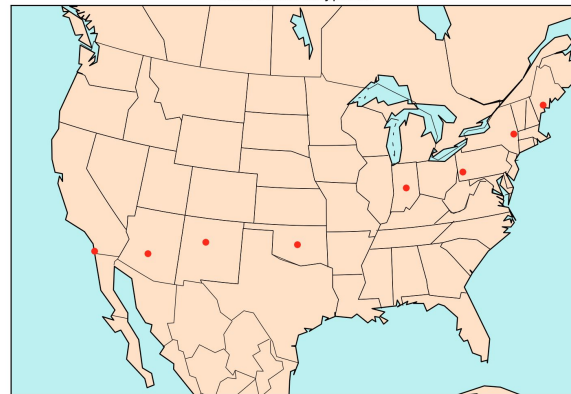
Drive time (Hours per Day) per State
to Fully Charge Battery in November



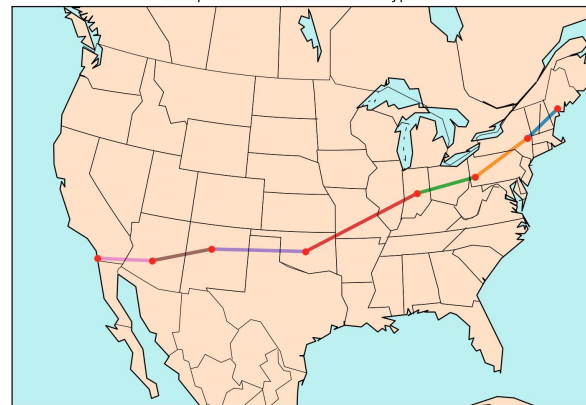
System Uncertainty & Assumptions

- Irradiance & Temperature at a per-state granularity
 - Particularly inaccurate for geographically diverse states (CA, WA, ...)
 - A more granular solution is behind a paid subscription (SoDa)
- Route between waypoints is approximated with a straight line
- Uses max irradiance in a specified month
 - No hour-by-hour accuracy
 - Does not adjust date of interest as drive goes on
- Not particularly useful for winter months
 - Cannot realistically charge the battery fully in many states during december/january

Initial Route Waypoints



Interpolation Between Route Waypoints



JULY

Drive time (Hours per Day) per State
to Fully Charge Battery in July



NOVEMBER

Drive time (Hours per Day) per State
to Fully Charge Battery in November



Units: Hours per Day	CA	AZ	NM	TX	OK	MO	IL	IN	OH	WV	PA	NY	VT	NH	ME
July	2.5	2.2	2.4	2.2	2.8	2.6	2.9	2.9	2.9	2.7	3.0	3.1	3.2	3.2	3.3
November	7.2	5.4	6.1	5.1	7.6	10.2	21.7	12.3	15.9	17.0	13.5	16.9	18.8	17.8	19.7