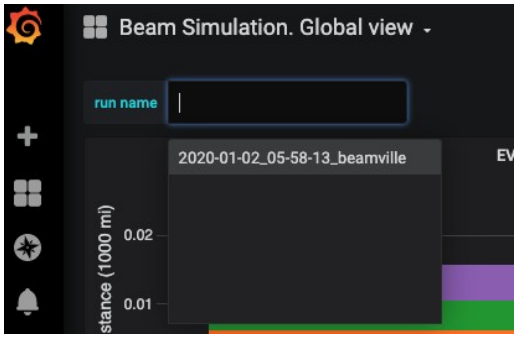
BEAM DEMO at TRB 2020

Before Starting (full explanation here)

1. Install and configure Docker Community Edition
2. Test: `docker run hello-world`
3. Install BEAM
4. Open terminal in beam folder and load the Docker image:
    - Mac/linux: `./docker-load.sh`
    - Windows: `docker-load.cmd`
5. Start influxdb and the dashboard: `docker-compose up -d`
6. Open dashboard: http://localhost:3003/d/dvib8mbWz/beam-simulation-global-view
7. Confirm beam works:
    - Mac/linux: `./run-beam.sh input/beamville/beam.conf`
    - Windows: `run-beam.cmd input/beamville/beam.conf`

Run with unlimited parking

1. Open terminal in beam folder and run unlimited parking config file:
    - Mac/linux: `./run-beam.sh input/sf-light-demo/unlimited-parking-1k.conf`
    - Windows: `run-beam.cmd input/sf-light-demo/unlimited-parking-1k.conf`
2. Output available at *output/sf-light/sf-1k-unconstrained_<UTC time stamp>*
3. Dashboard available at http://localhost:3003/d/dvib8mbWz/beam-simulation-global-view
4. You can pick between different runs on the dashboard as shown in the following:



5. See *output/sf-light/sf-1k-unconstrained_<UTC time stamp>/parking_output/plots* for maps of potential charging sites

6. Also see *output/sf-light/sf-1k-unconstrained_<UTC timestamp>/parking_output/parking_input_files* for parking input files generated as a result of the initial unconstrained run

Choose charging network and move it to inputs

Different charging infrastructure options are available in the output folder of the run at: output/sf-light/sf-1k-unconstrained_<UTC timestamp>/parking_output/parking_input_files

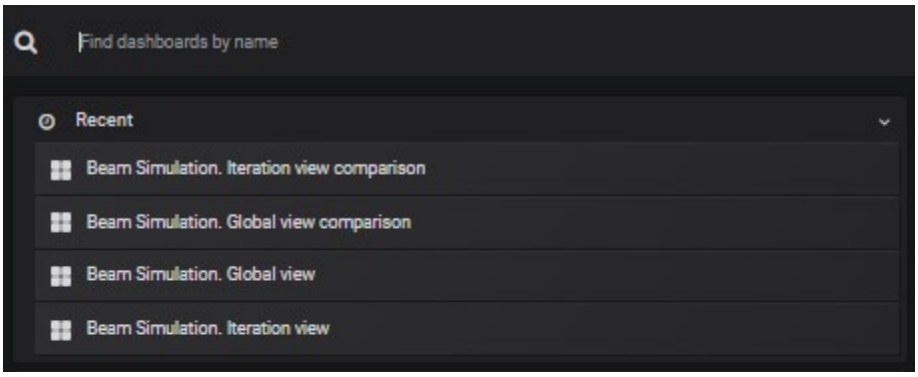
1. Choose a number of charging stations (*X-clusters*)
2. Choose a charging power (*X-kW*)
3. Choose an maximum queuing probability (*0.5 prob*)
4. Pick out a CAV depot and public charging file with these parameters, e.g.:
    a. **CAV depot**: *sf-depot-parking-4-clusters-50-kW-0.5-prob.csv*
    b. **Public**: *sf-taz-parking-29-clusters-50-kW-0.5-prob.csv*
5. Move files to *input/sf-light-demo/auto-generated-parking*
6. Update paths to files in *input/sf-light-demo/constrained-parking-1k.conf*
    a. **CAV depot**: *beam.agentsim.agents.rideHail.initialization.parking.filePath = ${beam.inputDirectory}"<path>"*
    b. **Public**: *beam.agentsim.taz.parkingFilePath = ${beam.inputDirectory}"<path>"*

Run with limited parking

1. Open terminal in beam folder and run constrained parking config file:
    a. Mac/linux: `./run-beam.sh input/sf-light-demo/constrained-parking-1k.conf`
    b. Windows: `run-beam.cmd input/sf-light-demo/constrained-parking-1k.conf`
2. Output available at *output/sf-light/sf-1k-constrained_<UTC time stamp>*

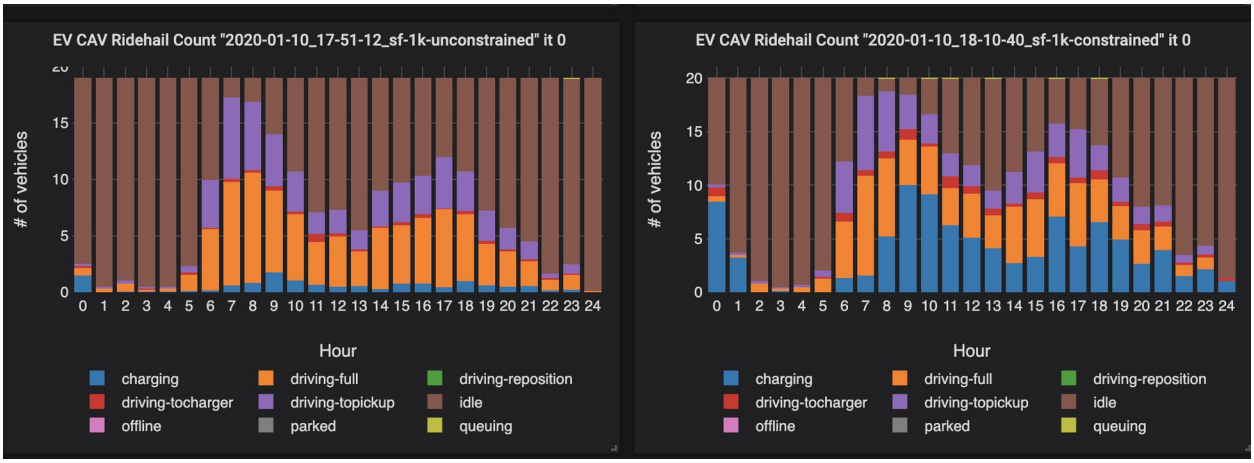
Compare results

Outputs can be compared between two simulations either in the Global view (aggregated by iteration) or Iteration view (One iteration at the time, aggregated by hour).

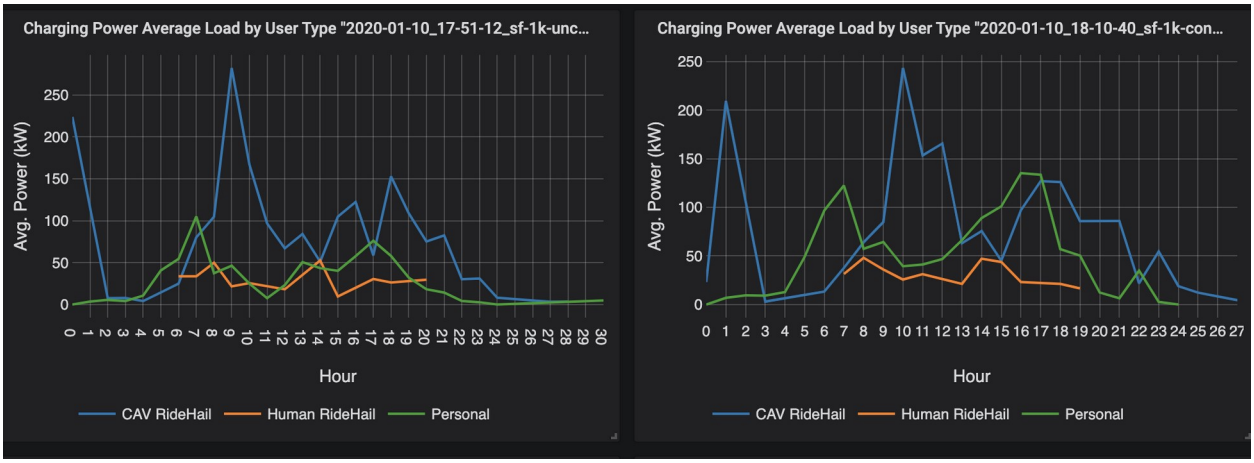


Possible outputs to compare (iteration view shown):

- What ride hail vehicles are doing at different times throughout the day:



- Charging loads:



- Ride hail VMT by purpose: