Project-Level Greenhouse Gas (GHG) Analyses

Analysis estimated lifecycle energy and GHG emissions from construction, operation, and maintenance of transportation facilities for project alternatives. GHG analyzed include: • **carbon dioxide (CO_2)** • **methane (CH_4)** • **nitrous oxide (N_2O)**

Analysis Results and Limitations that Effect Estimates

- The analysis indicated that the preferred alternative would produce more GHG from construction, operation, and maintenance of the facility than Alternative 2, but the greenhouse gas emissions estimated for the two build alternatives are not substantially different.
- Travel demand modeling does not forecast mode shift to transit and active transportation.

Construction, maintenance, and operations activities are broken into 5 categories:

Strategies for GHG Emissions Reduction

- Travel demand management - Mode Shift
  - Build Alternative 2
    - Bus Rapid Transit (40.3 miles*), Shared-use Paths (17.7 miles)
  - Modified Build Alternative 3
    - Bus Rapid Transit (36.7 miles*), Shared-use Paths (19.3 miles)
  - No Build - No Bus Rapid Transit or Shared-use Paths
- All of the alternatives in future years would potentially be lower due to future technology improvements (fleet electrification), and future vehicle emission standards.

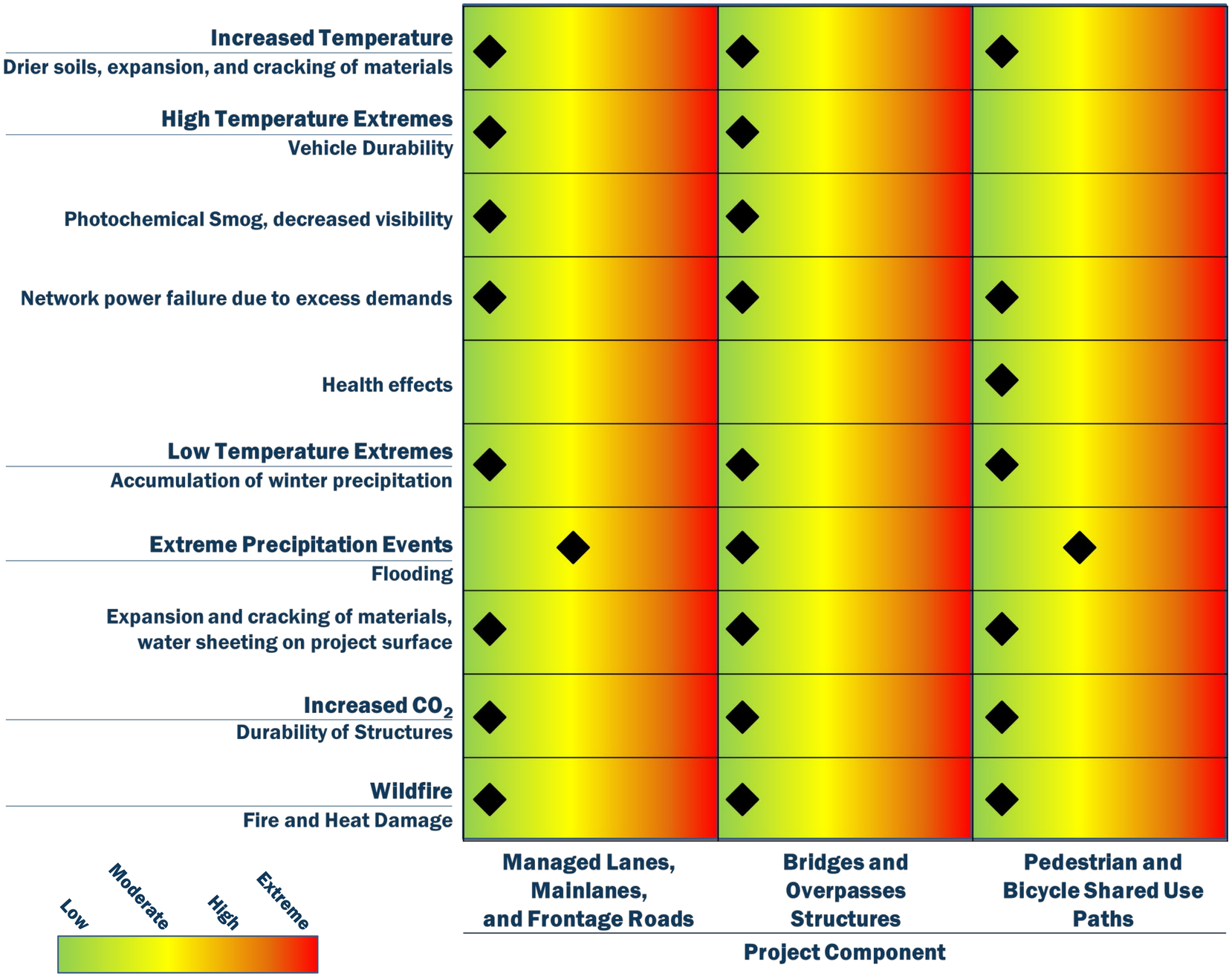
Estimated emissions for the following types of facilities:

Images from FHWA Infrastructure Carbon Estimator (ICE) – May 2021

*Length of Bus Rapid Transit based on managed lanes miles in both directions

Potential Impacts on I-35 from Climate Change

Risk Assessment for Changing Climate



Predicted Climate Change Impacts on the Proposed Project

- All risks predicted to be low to medium with resiliency strategies; no high or extreme risks
- Medium risk for extreme precipitation event-flooding due to managed lanes, mainlanes, and SUP depressed in some sections, may result in notifications, temporary closures, or detours
- Concrete more resilient to climate changes than asphalt and requires less maintenance

TxDOT Climate Resiliency Strategies

Design

- Utilization of concrete on roadways and shared-use path
- TxDOT Stormwater Management and Design
- Hydraulics Transportation and Infrastructure

Aesthetics (on-going public input)

- Aesthetics may include shade structures and vegetation along with the SUP

Maintenance

- Periodic maintenance assessments

Emergency Management and Response

- Traffic Management
- TxDOT statewide inclement weather and road condition notification system
- Communication strategies
- Advance Preparation
- Infrastructure Assessments after major events