Agenda Overview

- **AQAP Participation Framework**
  - Compendium of Existing/Proposed Near-Term Air Quality Improvement Strategies
  - Scott Broten, ICF International

- **I-710 Construction Staging Concept**
  - *Jerry Wood, Gateway Cities*

- **I-710 Health Impact Assessment (HIA)**
  - *Jonathan Heller, Human Impact Partners (HIP)*

- Roundtable Discussion
- Environmental Committee
- Wrap-up and Next Steps
Factors Responsible For Population Health

Health status is determined by: genetics (20 – 30%); health care (10%); social, environmental conditions, and behavior (60 – 70%). Health Affairs, 2002
Health Impact Assessment:

A combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a policy, plan, program or project on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects.
### Steps of an HIA

<table>
<thead>
<tr>
<th>Screening</th>
<th>Determines the need and value of a HIA</th>
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<tbody>
<tr>
<td>Scoping</td>
<td>Determines which health impacts to evaluate, methods for analysis, and a work plan</td>
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<tr>
<td>Assessment</td>
<td>Provides:</td>
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<td>1) a profile of existing health conditions</td>
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<td>2) evaluation of potential health impacts</td>
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<td>Recommendations</td>
<td>Provide strategies to manage identified adverse health impacts</td>
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<td>Reporting</td>
<td>Includes:</td>
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<td>1) development of the HIA report</td>
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<td>2) communication of findings &amp; recommendations</td>
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<td>Monitoring</td>
<td>Tracks:</td>
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<td>1) impacts on decision-making processes and the decision</td>
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<td>2) impacts of the decision on health determinants</td>
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Step 2: Scoping

Objective:

To create a plan and timeline for conducting an HIA for I-710 that defines priority issues, research questions and methods, and participant roles.
Scope Components

- Goals
- Health determinants that will be impacted
- Vulnerable populations that will be impacted
- Timelines
- Pathway diagrams
- Research questions
- Preliminary methods
I-710 HIA Goals

1. Provide I-710 decision-makers and other stakeholders with positive and negative health effects, findings and recommendations for alternatives being considered
2. Increase stakeholder participation and understanding of the I-710 project
3. Identify community health concerns/issues within Gateway Cities whose solutions may be unrelated to the I-710 project
4. Provide a model for future transportation and infrastructure HIAs (including evidence and utility of doing an HIA)
5. *Add value to the I-710 related analysis while utilizing the I-710 EIR/EIS technical data to the greatest extent possible to reduce redundancy.

* Note: Revised based on discussion of I-710 HIA Technical Working Group at its July 11th Meeting.
Health Determinants

Selected by the HIA TWG:
- Air quality
- Noise
- Mobility
- Traffic safety
- Jobs and economic development
- Access to neighborhood resources *(parks, food, healthcare, etc.)*

Others Considered but not selected:
- Housing
- Education
- Neighborhood safety
- Social cohesion
- Water quality
- Disease Vectors
- Poverty
- Racism
- Segregation
- Inequality
- Political Participation
I-710 HIA Overarching Parameters

Alternatives to be considered:
- Alternative 1 (no build)
- Alternative 5A (10 lanes)
- Alternative 6A (5A + 4 lane freight corridor)
- Alternative 6B (6A + zero emissions)
- Potentially Alternatives 6C and/or 6D (6B + tolling)

Time boundaries:
- Consider 2035 impacts only (other analysis covering construction impacts)

Geographic boundaries:
- Vary by issue area (e.g., AQ vs noise vs jobs)

In addition to the general population, the following vulnerable populations will be considered:
- Age (0-5; 6-17; 65+)
- Race/ethnicity (African American; Hispanic; non-English speakers)
- Income (poverty; 200% of poverty)
- Pre-existing conditions (asthma; cardiovascular disease; diabetes)
Health Pathways

Transportation Project Proposal → Proximal Impacts → Health Impact

For example:
Alternative 6a

For example:
Driving times
Walking/Physical Activity
Air quality
Noise levels
Access to parks
Jobs

For example:
Heart disease
Asthma
Diabetes
Stress
Mental health
Injury

Scoping: Develop these pathways as hypotheses; from them, develop research questions and ways to measure answers (indicators).

Assessment: Use I-710 information and examine literature to confirm or refute links in pathways; find data to measure existing conditions for each indicator; predict changes to indicators for project alternatives.
Overarching Scoping Parameters

- EIR has all necessary data
- EIR has most necessary data
- EIR has some necessary data
- EIR does not have necessary data
- TBD: Additional data request necessary
1. Air Quality Effects

I-710 Corridor Project alternatives

CQ4, AQ3
\( \Delta \) in public transit access and ridership

CQ1
\( \Delta \) in # of vehicles on freeways and arterials

CQ1
\( \Delta \) in # of vehicles on local roads

CQ2
\( \Delta \) in vehicle speeds on freeways

CQ2
\( \Delta \) in vehicle speeds on arterials and local roads

AQ2
\( \Delta \) in other sources of pollution

AQ1, AQ2, AQ11
\( \Delta \) in air pollutants: (PM 2.5, PM 10, NO2, NOx, Ozone, Sox, Benzene, Diesel PM, Acrolein, other mobile air toxics, ultrafines, green house gases)

AQ1, AQ11
Climate change (change in rainfall, sea-level rise, marine life)

(Lower priority)

AQ1
\( \Delta \) in vehicle emissions due to technology

AQ1, AQ2, AQ10
\( \Delta \) in exposure to air pollutants

AQ1, AQ2, AQ9, AQ10
\( \Delta \) in exposure to air pollutants

AQ1, AQ2, AQ4, AQ5, AQ6, AQ7, AQ8
\( \Delta \) in health outcomes:
- Asthma/other respiratory diseases
- Cardiovascular disease
- Cancer
- Mortality
- Low birth weight, pre-term birth
- Reproductive health
- Children’s lung development

AQ4
\( \Delta \) in health outcomes:
- Asthma/other respiratory diseases
- Cardiovascular disease
- Cancer
- Mortality
- Low birth weight, pre-term birth
- Reproductive health
- Children’s lung development

AQ4
\( \Delta \) in attendance at school or work

AQ4
\( \Delta \) in effects from education, employment, and incomes & associated health outcomes

\( \Delta \) in environmental quality

(see Neighborhood Resources)
2. Noise Effects

DRAFT

I-710 Corridor Project alternatives (including proposed mitigations)

CQ1
Δ in # of vehicles on freeways and arterials

CQ2
Δ in vehicle speeds on arterials and local roads

N1
Δ in vehicle noise due to technology

CQ1
Δ in # of vehicles on local roads

CQ2
Δ in vehicle speeds on freeways

N2
Δ in other sources of noise

CQ5, N6
Δ in proximity of sensitive uses to freeway/noise sources

Δ in noise/vibration levels near local roads and freeways

N1, N2, N7
Δ in exposure (modeled/measured at different times of day) (e.g., at home and school)

Δ in health outcomes:
- Hypertension
- Annoyance
- Sleep disturbance
- Cardiovascular disease
- Education outcomes (reading, recall, recognition, and attention)

Δ in proximity of sensitive uses to freeway/noise sources

Δ in environmental quality

(see Neighborhood Resources)
3. Mobility Effects

- Health impacts of stress include: poor mental health, increased inflammatory response, decreased immune response
- Health impacts of chronic disease includes: heart disease, diabetes, hypertension,
- Health impacts of delayed emergency response times include: stress, potential for survival and recovery
4. Traffic Safety Effects

DRAFT

I-710 Corridor Project alternatives (including separating cars and trucks, intersection improvements, and changes in freeway geometry)

- CQ1: Δ in # of vehicles on freeways and arterials
- CQ2: Δ in # of vehicles on local roads
- CQ3: Δ in vehicle miles traveled

- TS1: Δ in # of truck related motor vehicle collisions on freeways, on ramps, and on local roads
- TS2: Δ in severity of collisions on freeways and on ramps (due to speed changes and separated lanes)
- TS3: Δ in # of non-truck related motor vehicle collisions on freeways, on ramps, and on local roads
- TS4: Δ in # of non-truck – pedestrian/ bicycle collisions on local roads
- TS5: Δ in # of vehicles on local roads

- TS1, TS3: Δ in # of truck – pedestrian/ bicycle collisions on local roads
- TS1, TS3: Δ in # of non-truck – pedestrian/ bicycle collisions on local roads

- CQ1, CQ2, CQ3: Δ in # of vehicles on freeways and arterials

- TS4: Δ in traffic related injuries & fatalities
- TS5: Δ in stress & stress-related illness
- TS6: Δ in exposure to hazardous materials & associated health outcomes
• Health impacts of mental health include: stress-related illness, crime, substance abuse, domestic abuse, change in lifespan
• Health impacts of chronic disease includes: heart disease, diabetes, hypertension
6. Neighborhood Resources Effects

• Environmental hazards refers to air pollution, noise, odors, congestion, traffic safety
• Health outcomes include: injury and morbidity from crime; stress-related illness; effects from lack of social cohesion; and effects from lack of access to neighborhood resources
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<tr>
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<td>I-710 HIA TWG</td>
<td>Draft HIA Goals, Parameters, Health Determinants</td>
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<td>May 26</td>
<td>I-710 HIA TWG</td>
<td>Draft HIA Pathways</td>
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<td>July 11</td>
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<td>July 13</td>
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<td>Aug 15</td>
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<td><strong>Aug 11</strong></td>
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<td>Sept 7</td>
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<td>Oct 12</td>
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<td>Oct 26</td>
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<td>Final I-710 HIA Report</td>
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<td>Nov 2</td>
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<td>Final I-710 HIA Report</td>
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