An Overview of DoT
Strategic Transportation Evaluation and Assessment Model (STEAM)
What is a travel demand model?

A mathematical representation of how, where, when and why people travel
What is STEAM?

- **Strategic**
  - Covering the whole of Emirate of Abu Dhabi

- **Transportation**
  - Includes all motorised modes of transport

- **Evaluation**
  - Produces network performance Indicators

- **Assessment**
  - Comparing Transport Alternatives

- **Model**
  - Testing of What-If Scenarios
What can we use the model for?

- **Strategic level**
- **Intermediate level**
- **Local area level**
Trip making behavior

Decide to make a shopping trip

Trip Generation

Decide where to go for shopping

Trip Distribution

Then decide how you will travel; car, bus, rail or walk

Mode Choice

Last, decide which route you want to take based on time and distance

Assignment of Traffic
Modes of travel in STEAM

**Private Travel**
- Car
- Taxi
- Company Bus
- School Bus
- Walk / Bicycle

**Public Transport**
- Bus
- Ferry
- BRT
- LRT
- Metro
- Regional Rail
- Park & Ride

**Freight Modes**
- LGV
- HGV
How was STEAM developed?

1. Extensive Travel Surveys:
   Over 15,000 surveys carried out in Abu Dhabi Emirate:
   - 3,300 Household Interviews.
   - 1,000 Labor Camp Residents Surveys.
   - 6,500 Roadside Interview Surveys at ADNOC stations.
   - 1,500 Airport Traveler Surveys.
   - 1,500 Public Transport User Survey.

Note. Surveys established local travel behavior and travel characteristics.
2. Coordination and Data from Government Agencies:
   - Urban Planning Council – Land use inventory and forecasts.
   - Abu Dhabi Police – Authorization for, and assistance with travel surveys.
   - TransAD – Sample of taxi travel database.
   - ADPC, ADNOC others.
3. Code data into the Emirate wide Model, for current and future scenarios:
   - Land use and demographic information in over 2,000 subareas.
   - Road networks – lanes & posted speeds.
   - Road junctions – configurations including signal settings.
   - Public transport routes, services & frequencies.
   - Eithad rail network.
   - Transport policy settings, e.g. price of public transport fares.
   - Travel cost settings, e.g. value of time, fuel price.
4. Replicate the travel demand and behavior of different users:
   - Residents, segmented by income groups.
   - Laborers.
   - Tourists and businessmen.
   - Freight movements, e.g. short haul and long haul.
   - Special areas – e.g. Corniche and Cultural District.
   - External traffic from other emirates and countries.
5. Additional Capabilities of STEAM model:
   • Effect of introducing car ownership control.
   • Increased trip making for people without access to a car when public transport availability is increased.
   • Changes in travel behavior due to crowding on public transport.
   • Changes in the start time of travel due to road congestion or the cost of travel.
   • Attractiveness of future travel modes i.e. metro and light rail compared to existing modes.
How was STEAM developed?

6. Validate the travel patterns produced by the Model against:
   - Traffic counts.
   - Public transport patronage counts.
   - Heavy goods vehicle counts.
   - Sample of known taxi trips.
   - Surveyed travel times from point to point.
What can we use the model for?

1. **Land Use Assessment**
   - Growth Management Strategies.
   - Impact of Development on Transport Network.
   - Network Adequacy for Development.
   - Evaluating Land Use Mix.

2. **Short and Long Range Planning**
   - Transport Investment Decision Support Tool.
   - Develop Action Plans for Intermediate Years.

3. **Others**
   - ‘What-if?’ scenarios.
   - Air Quality, Context Planning, Reliability Indices, Pedestrian Accessibility Measures.
Infrastructure Assessment & Evaluation

- **Highway Capacity Needs and Priorities**
  - Alternative Alignment
  - Number of Lane and Functional Class
  - Connectivity to Surroundings
  - Right of way Reservation
  - Interchange Design Traffic Forecast

- **Public Transport System**
  - Type of facility, metro, light rail or buses
  - Route alignment
  - Station size and location
  - How many cars/buses, headway
  - Ridership forecast
  - Bus loading, bus stops and bus lanes
Policy Testing & Evaluation

- **Strategy & Policy Assessment**
  - Cordon/Toll Charges
  - Parking Charges
  - Congestion Pricing
  - Park and Ride
  - Rail, Bus and Ferry Fare
  - Taxi Charge
  - Mobility Management
  - Auto Ownership Control
  - Development Impact Charges
  - Freight Policies
What STEAM is used for at DoT

- STEAM used for all transportation projects within Abu Dhabi, Al Ain and Al Garbia.
- Used for all DoT highway and public transport studies.
- STEAM runs on high-spec computers housed within DoT, so external agencies/consultants access STEAM via remote log-in accounts.
Thank You

* All maps shown in this presentation are modeling maps to study alternatives and not necessarily DoT's official plans.