CEE123/223
Transportation Planning & Modeling 1

Miasma Beach

Project Overview

1. **Miasma Beach: Regional Context**
2. **Miasma Beach: City Context**
3. **2000 Miasma Beach Transportation Study**
4. **2020 Miasma Beach Transportation Model**
5. **RFP: Tasks 1-7**

Module Objective and Expected Outcomes:
The Miasma Beach Transportation Model

- **Objective:** This module is an overview of the development of a travel forecasting model system for Miasma Beach.
- **Expected Outcomes:** At the end of this module, you will:
  1. Gain familiarity with the mythical town of **Miasma Beach**
  2. Understand the development of Miasma Beach with respect to **land use** and **transportation**, both **locally** and **regionally**
  3. Gain familiarity with the **Transportation Planning Process**
  4. Gain familiarity with the **Travel Forecasting process**
- **Module Length:** This module comprises approximately 15 slides and takes about 15 minutes.
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The Miasma Beach Transportation Model

Miasma Beach

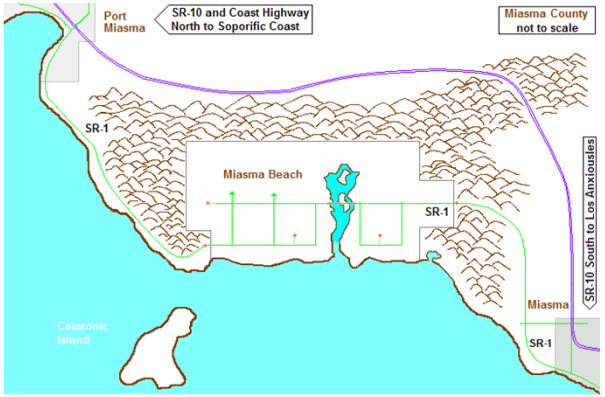
"In every outthrust headland, in every curving beach, in every grain of sand there is the story of the earth."

Rachel Carson

The Miasma Beach Transportation Model
Regional Context

- The County of Miasma is a coastal, agricultural-oriented, and primarily rural region that has just begun to see:
  - increased **land development** **and** **population growth**
  - Increased **agricultural** and **maritime** economic activity
  - an influx of **tourist** traffic to and through the region.
- The major city is Miasma, located to the southeast
- The **coastal region** comprises **mountainous terrain** linked by Pacific Coast Highway traversing the small city of Miasma Beach, heading north to Port Miasma.
- The primary **regional transportation route** is State Route 101, an inland freeway linking Miasma and Port Miasma, running north of the coastal Miasma Mountains.
- **See Figure 1**

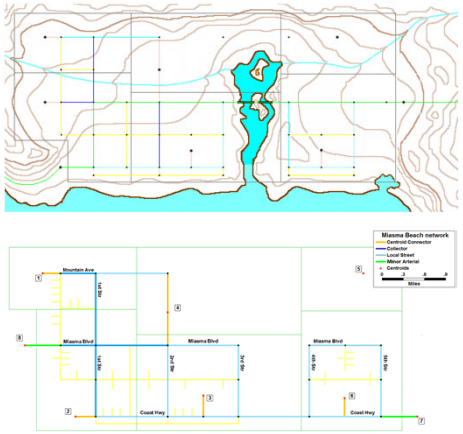
The Miasma Beach Transportation Model
Regional Context



The Miasma Beach Transportation Model
The City of Miasma Beach

- **Miasma Beach** is located on Miasma Bay within a seaside valley of approximately 14 square miles.
- The area, encircled by the Miasma Mountains, is mainly low, flat, and fertile **land**, with the exception of residential areas in the foothills of Old Town and the eastern suburbs
- The Miasma Marsh **wetlands** consume 2 to 3 square miles in the central part of the basin.
- The southern border comprises wide **beaches** and an inlet to Miasma Marsh. The beach is bracketed by headlands to the west and the east.
- A topographic **map** of the area is provided in Figure 2.
- A transportation network **map** is provided in Figure 3.

The Miasma Beach Transportation Model
The City of Miasma Beach (2000)



The Miasma Beach Transportation Model
Prior Transportation Model Application (2000)

- Increased growth has lead to increased congestion, diminished air quality, and traffic safety **problems** being identified.
- A regional transportation study was conducted in **2000** to examine anticipated growth impacts over the next decade.
- The **Miasma Beach Transportation Model** was developed as a trip-based Four Step Model using **TransCAD**.
- **TransCAD** is a full-featured Geographic Information System (GIS) designed specifically to manage, analyze, and display data related to transportation systems. It has a comprehensive set of transportation analysis models.
- The model depicts both the Transportation and the Activity Systems as **simplified** abstractions of the real world.

The Miasma Beach Transportation Model
Prior Transportation Model Application (2000)

- **The Miasma Beach Transportation Model Components:**
  - **Transportation System:** network coding (field studies, aerial photos)
  - **Activity System:** zone data (US Census, Employment Surveys)
  - **Trip Generation:** production and attraction models for 3 trip purposes
  - **Minimum Paths:** using free-flow automobile travel times
  - **Trip Distribution:** doubly-constrained gravity model with F-factors
  - **Mode Choice:** no mode choice model was estimated
  - **Time-of-Day:** AM-, PM-, and Off-peak periods
  - **Trip Assignment:** equilibrium assignment
  - **Feedback:** No feedback to prior steps in the current model system
  - **Air Quality:** The regional is compliant
- The model was **validated** using 2000 traffic counts. **Modeled** volumes on screen lines and key links were within 5 percent of **observed** counts. Mean travel times by trip purpose were within 10 percent of observed values.

The Miasma Beach Transportation Model
Prior Transportation Model Application (2000)

- The results of the modeling exercise included:
  - Managed **land use** development according to City zoning
  - **Transportation system** development based on modeling and evaluation of several future alternatives
  - Continued **tracking** of economic growth, tourist travel, and **system performance**
- The chosen transportation system alternative was planned and programmed for completion by the year **2020**
- Next the **model update** was scheduled for the year **2020**, corresponding to updates for US census, regional socio-demographic forecasts, and regional travel surveys.
- The corresponding network will serve as the starting point for the **2020** model update.

The Miasma Beach Transportation Model
Transportation Model 2030 Tasks

- **Task 1.** Validate 2020 Base Network
- **Task 2.** Develop 2020 Base Network File and Skims
  - Network Development: First Interim Report (Task 1 and 2)
- **Task 3.** Trip Generation
- **Task 4.** Trip Distribution
- **Task 5.** Time-of-Day and Trip Assignment
  - Model Validation: Second Interim Report (Task 3-5)
- **Task 6.** Application of the Transportation Planning Process to define, model, and evaluate future transportation system alternatives for the **2030** horizon year.
  - Model Forecasts: No Build and 3 design alternatives
- **Task 7.** Final Report

Miasma Beach Transportation Model
CEE123 Modeling and Reporting Process

- You are consultants to the City of Miasma Beach
- You will complete work tasks as one of 2-3 team members.
- **Tasks 1 and 2** lead to Interim Report 1 (Chapters 1 and 2). After review, teams must correct all errors before proceeding.
- **Tasks 3 thru 5** lead to Interim Report 2 (Chapters 3-5), and will incorporate the corrected chapters of Interim Report 1. After review, teams must correct all errors before proceeding.
- **Task 6** will be completed as a team (including A0) but each member will complete an individual design alternative (A1, A2, …) including problem identification, alternative development and analysis, and a full cost effectiveness analysis.
- **Task 7** will be a team Final Report, incorporating the individual design alternative sections.

Summary:
Miasma Beach Transportation Model

- The **prior** transportation study (2000) resulted in a Long Range Transportation Plan for **2020**.
- The **first objective** is to update and validate the **2000** Miasma Beach Transportation model to reflect the new **2020** base year.
- The **second objective** is to develop future transportation alternatives to address growth impacts anticipated for the year **2030.** Each team member will develop an independent future project alternative.

The Miasma Beach Transportation Model
Modeling Overview

End of Module

© M.G.McNally
Department of Civil & Environmental Engineering
University of California, Irvine
Irvine, CA 92697
mmcnally@uci.edu