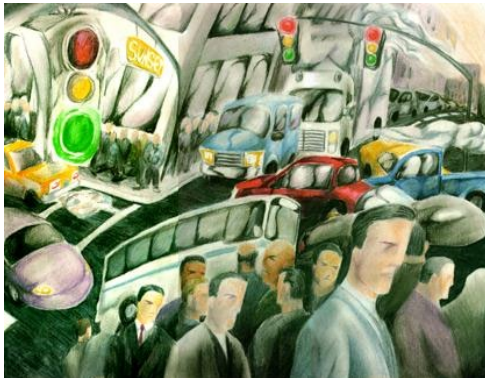


CEE123/223

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.
- **Copyright:** This content in this and all other course modules is protected and may not be shared, uploaded, or distributed.

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

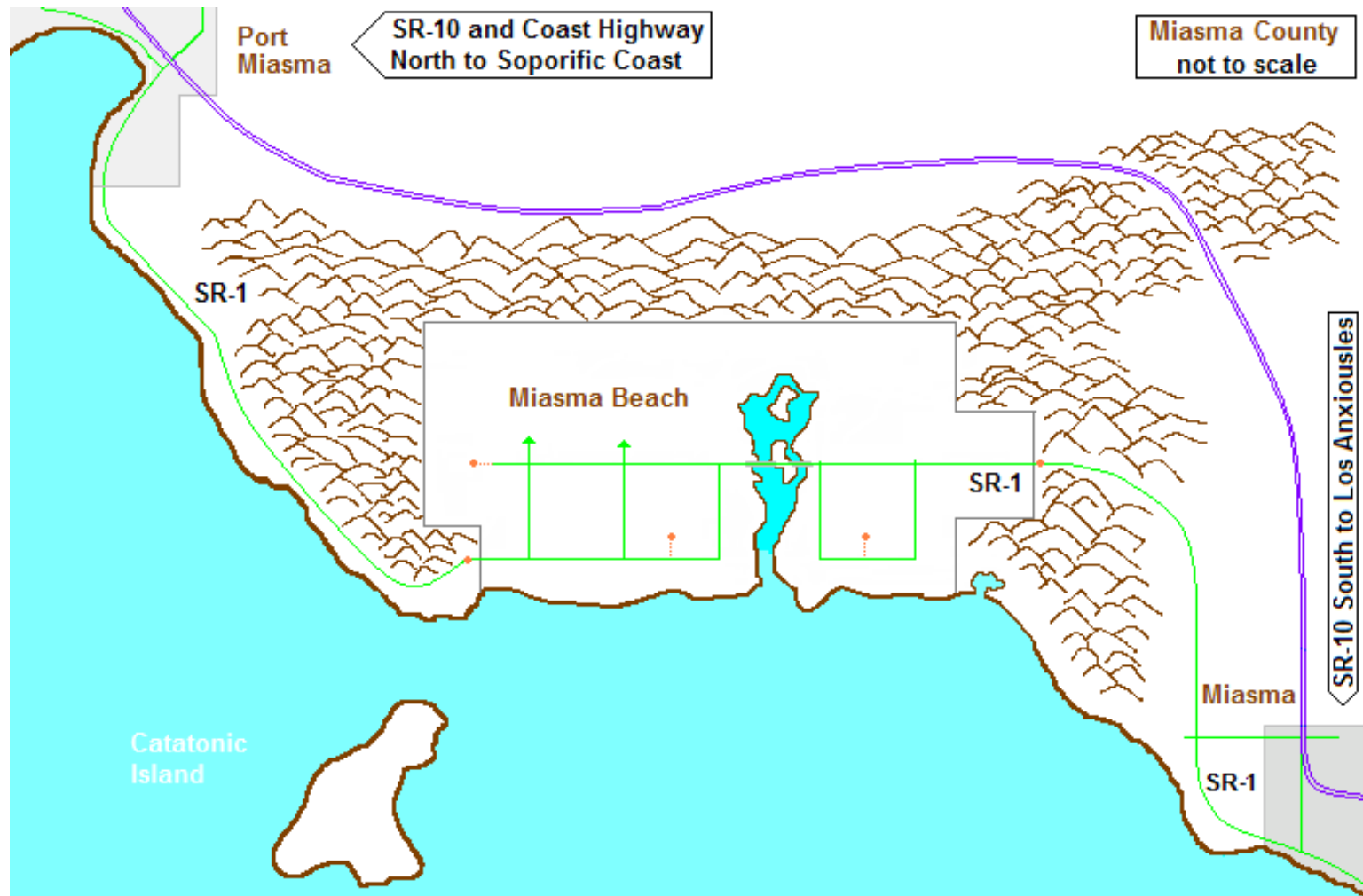
The Miasma Beach Transportation Model

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



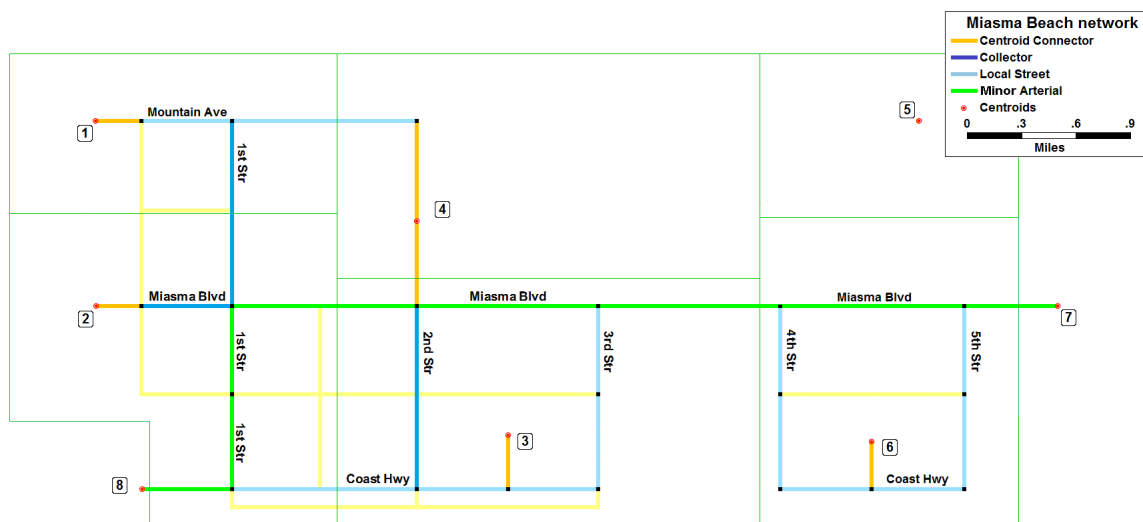
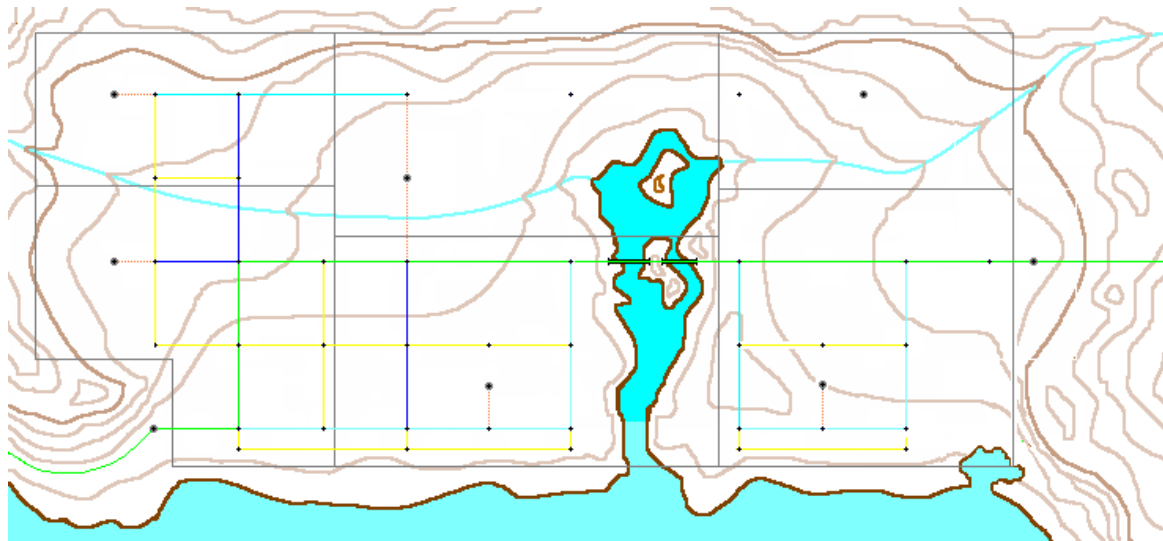
The Miasma Beach Transportation Model

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)



**Sample:
May not
reflect
W'23**

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 individuals and as a team.
- **Tasks 1 and 2**, including Interim Report 1, is completed as a team. After review, the report will be updated and re-submitted with Report 2.
- **Tasks 3 thru 5**, including Interim Report 2, is completed as a team. After review, the report will be updated and re-submitted with the Final Report.
- **Task 6** will be completed as a team but each member must complete an individual design alternative, including problem identification, alternative development and analysis, and a full cost effectiveness analysis.
- **Task 7** will be a single 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**.
- The project has both individual and team components.

The Miasma Beach Transportation Model Modeling Overview

End of Module



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