SCATS Adaptive Traffic Control System
Introduction

Bo Gao, P.E., PTOE
SCATS Background

- **Sydney Coordinated Adaptive Traffic System**
- **The Roads & Traffic Authority of New South Wales**
  - Developer & Primary User of SCATS
- **Extensive User Base**
  - Effective, Mature, Practical System
- **Worldwide – About 145 Cities**
  - Over 33,000 Intersections Under SCATS Control
SCATS US Installations

Sunnyvale, Gresham and Santa Rosa Systems Expanded Within Last Year
SCATS Objectives

Optimize cycle length, split and offset to achieve

- Minimum stops with light demand
- Minimum delay with normal demand
- Maximum throughput with heavy demand
Typical Detection Layout

- Stop Bar Presence Detection
  - Inductive Loop
  - Video Detection
  - Magnetic Detection
  - Radar Detection

- Optimal Detection Zone length is 15' starting 3' back of stop bar
- Detection Zones must be per lane
SCATS Detectors

- SCATS Operated by Looking at “Space” Between Vehicles
- One of the “Secrets” of SCATS is the Relationship Between Traffic Density (DS) & Space Time.
- **Degree of Saturation** – measure of effectiveness of green time
SCATS Adaptive vs TOD Operation

![Graph showing comparison between Previous TOD Cycle Length, SCATS Optimal Cycle Length, and Reduction in Cycle Length due to SCATS Adaptive Control over 24 hours.](image)
SCATS Features

Real Time Operation Information

Real Time Alarm Monitoring
SCATS Features

- Real-Time Time / Space Diagrams
SCATS Feature

- Historical Reports
  - Traffic Counts
  - Phase Times
  - Degrees of Saturation
  - Adaptive Trigger
  - And More…
Controllers

- 170 E Controllers Thru Interface Card

- 2070s Thru Controller Software

- ATC Controllers
  - Econolite ASC/3
  - Eagle M50 Series
Communications

- Multiple Communications Options
  - Point-to-Point – Voice Grade Phone Lines
  - Point-to-Multipoint
    - Cobb County, GA - Fiber
  - Ethernet Communications
    - Park City, UT – Fiber
    - Sunnyvale, CA – Copper
    - Santa Rosa, CA – Copper & wireless
    - Oakland County, MI – Fiber & wireless
### Independent Third-Party Studies

<table>
<thead>
<tr>
<th>Location</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>Santa Rosa, CA</td>
<td>Average increase in speed of 49%</td>
</tr>
<tr>
<td></td>
<td>Average reduction in travel time of 32%</td>
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<tr>
<td>Gresham, OR</td>
<td>Up to 19% reduction in peak period peak direction travel time</td>
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<tr>
<td></td>
<td>Up to 30% reduction in off peak travel times</td>
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<tr>
<td>Sunnyvale, CA</td>
<td>Reduction in stops between 28% and 54% in all measured time periods.</td>
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<tr>
<td></td>
<td>Reduction in travel time between 16% and 21% in all measured time periods.</td>
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<tr>
<td>Menlo Park, CA</td>
<td>Delay reduced by up to 70%</td>
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<tr>
<td></td>
<td>Travel time reduced by up to 25%</td>
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<tr>
<td>Road Commission for Oakland County, MI</td>
<td>Off peak travel-time reduced by up to 31%</td>
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<tr>
<td></td>
<td>Peak period travel time reduced by up to 8%</td>
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<tr>
<td>Chula Vista, CA</td>
<td>System payback in 11 months</td>
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<tr>
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<td>Delay reduced by up to 45%</td>
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<tr>
<td></td>
<td>Travel time reduced by up to 20%</td>
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**SCATS Advantages**

- **True Cycle-by-Cycle Adaptive**
- Most Proven System with Longest History
- No Advanced Detection Required
- Is Not Model Based
  - No Models to Create to Run Adaptive
  - No Models to Update for New Developments or Traffic Condition Changes
- Self-Calibrating Features
- Real-time Alarm Monitoring & Notification
For Additional Information Contact:

Bo Gao
TransCore
480-551-4657
Bo.gao@transcore.com