SALT LAKE CITY TRAFFIC CONTROL CENTER.
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INTERAGENCY COOPERATION
DAILY DETECTOR ALERTS AND
Salt Lake City Factoids (Communications)

- 237 signalized intersections maintained by Salt Lake City
  - 189 connected by fiber
  - 7 connected by radio
  - 41 not connected to communication
- 1 engineer/2 timing and operation technicians/5 maintenance technicians devoted to signals
- Intelight Central System
- 175 of signals collecting high resolution data
- 3 1/2 Years of experience with high resolution data
Salt Lake City Factoids (Detection)

- Length of stop bar detectors on minor movement
  - 35’ – 40’

- Use of dilemma zone or other detection on arterial main line
  - None

- Detection Technologies used
  - Inductive loop, Camera, FLIR, Radar, Sensys pucks

- “Lane by Lane” or “Lane Group Detection”
  - Varies by location and technology
Salt Lake City Factoids
(Detection)

- Link to detection standard number scheme
  - Mostly contact closure cards, some click 600, All new installations will be click 650.

- Detection Testing and Maintenance Practices
  - Checked for proper operation during PMI
  - For the past 2 years we have been using the Daily Email Detector Alarms

- 15 of Signals with Emergency Vehicle Preemption
- 5 of Signals with RR Preemption
Salt Lake City UDOT Cooperation
Maintenance Example: Nighttime detection problem

**BEFORE:** Video detection not working at night

Minor street through & left turn max out at night only

- **Gap out**
- **Max out**
- **Force off**
- **Pedestrian activation** (shown above phase line)
- **Skip**

**Metric:** Purdue Phase Termination

**Detection Requirements:** None
Maintenance Example: Nighttime detection problem

After: Detection repaired

Phases are rarely used at night

Metric: Purdue Phase Termination
Detection Requirements: None
Alert Example

---The following signals had too many force off occurrences:
1019 - 300 West & 800 South - Phase: 2 (Force Offs 100%)
1019 - 300 West & 800 South - Phase: 4 (Force Offs 100%)
1019 - 300 West & 800 South - Phase: 6 (Force Offs 100%)
1019 - 300 West & 800 South - Phase: 8 (Force Offs 100%)
7070 - 3300 South & I-15 SPUI - Phase: 1 (Force Offs 100%)
7070 - 3300 South & I-15 SPUI - Phase: 5 (Force Offs 100%)

---The following signals had too many max out occurrences:
1035 - West Temple & 1700 South - Phase: 4 (Max Outs 100%)
1035 - West Temple & 1700 South - Phase: 8 (Max Outs 100%)
1122 - University St & 400 South - Phase: 5 (Max Outs 91.7%)
7635 - 600 South & 300 West - Phase: 2 (Max Outs 100%)

---The following signals had too few records in the database:
5297 - Main St. (SR-165) & 1700 S (Providence) - Phase: 0 (Missing Records)

---The following signals had unusually low detector hits:
6045 - US-6 (Spanish Fork) & Canyon Road - Phase: 2 (Has Unusually Low Counts.)
6045 - US-6 (Spanish Fork) & Canyon Road - Phase: 6 (Has Unusually Low Counts.)

---The following signals have stuck ped detectors:
5033 - 2100 South (Wilson) & 1100 West - Phase: 2
5507 - Lincoln & 25th - Phase: 2

- Force Offs
- Max Outs
- No Data
- Low Detector Hits
- Stuck Pedestrian Button

Daily email sent at 7 a.m.
Compare to previous day’s data. Only phases with new flags are reported.

Metric: Purdue Phase Termination Detection Requirements: None
Detection Alert

Phase 4 at 400 E & 800 N, 4/8 & 9/2014

- Phase 4 starts constant call
- Alert email sent
- SPMs evaluated for % max outs

4/8/2014

4/9/2014

Metric: Purdue Phase Termination
Detection Requirements: None
My Process

- Receive email report
- Manually check each intersection
- Send appropriate work orders

“Data Dump”

Metric: Purdue Phase Termination Detection Requirements: None
My Process

• Watch list
  • Eliminate duplication of work orders
  • Investigate further
  • Searchable history of events

• Troubleshooting
  • Verify Complaints
  • Review historical data

Metric: Purdue Phase Termination Detection Requirements: None
Troubleshooting Example: Intersection at or near capacity

Before:

Phase 3

- Gap out
- Max out
- Force off

Phase 4

- Pedestrian activation

Metric: Split Monitor
Leading Phase 3
Troubleshooting Example: Intersection at or near capacity

After:

Phase 4
- Plan 4
  - 37.0 - 85 Percentile Split
  - 31.8 Avg. Split
  - 44.0% ForceOffs
  - 55.1% GapOuts
  - 0.0% Skips

Phase 3
- Plan 4
  - 30.7 - 85 Percentile Split
  - 24.4 Avg. Split
  - 79.0% ForceOffs
  - 21.0% GapOuts
  - 0.0% Skips

Time (Hour of Day)

Gap out
Max out
Force off
Pedestrian activation (shown above phase line)
Skip

Metric: Split Monitor
Lagging Phase 3
Summary

• Proactive
• Basic operation/history
• Trains
• Operational knowledge vs. out of sight, out of mind