**SALT LAKE CITY TRAFFIC
CONTROL CENTER.
BRYAN MEENEN**

**INTERAGENCY COOPERATION
DAILY DETECTOR ALARMS 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

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

Metric: Purdue Phase Termination
Detection Requirements: None

Maintenance Example: Nighttime detection problem

After: Detection repaired

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

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 SPU I - Phase: 1 (Force offs 100%)  
7070 - 3300 South & I-15 SPU I - 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

4/8/2014

4/9/2014

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

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

Phase 4

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

Metric: Split Monitor
Leading Phase 3

Troubleshooting Example: Intersection at or near capacity

After:

Phase 4

Phase 3

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

Metric: Split Monitor
Lagging Phase 3

Summary

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