

Update on COG Incident Management and Response (IMR) Action Plan Recommendations: Back-Up Power for Traffic Signals



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Overview

- Background
- About power back-up systems
- Traffic Signals Subcommittee discussions
- Updated COG/TPB surveys results
- Updated Findings

Background

- IMR Recommendation:
 - Conduct an assessment of and expeditiously install back-up power for major traffic signals
- The IMR committee has now sunset; this topic is now in the purview of the COG Emergency Preparedness Council (EPC)
- Technical considerations affecting power back-ups have been compiled from member jurisdictions to highlight important factors that may not be apparent to a non-technical audience



3

Traffic Signals Power Back-Up Systems

- Battery-Based Systems
 - Pre-installed batteries on site
 - Instant-on, but limited life before battery depletion (often about 8 hours of operations)
 - Batteries need to be stored and periodically swapped



- Generator-Based Systems
 - Either generators pre-installed on site or portable generators delivered to sites
 - Time lag and logistics to deliver portables on site, but theoretically unlimited operation so long as someone refuels them

4

Review of Traffic Signals Subcommittee Back-Up-Related Discussions

- **Installation:** Signals agencies have been pursuing back-up power as able
 - NCR rate of installation greater than most other areas around the country
- **Costs:** Installation estimated \$12,500 to \$25,000 per intersection (perhaps more in certain situations); maintenance costs \$1,000 to \$3,000 per intersection per year
- **At emergency-critical locations:** Traffic Control Point (TCP) intersections from emergency transportation/evacuation plans were reviewed
 - More likely to already have back-up systems
 - Raised awareness regionally TCP status as a consideration for future back-up deployments

5

List of Criteria for Installing Back-Up Systems Compiled in Response to IMR Request *Factors Discussed by the Signals Subcommittee**

- Access considerations
 - Airport access/entrance roads
 - Military base access/entrance roads
 - Signals at ramps to/from freeways
- Design/traffic engineering considerations
 - Unusual intersection geometrics
 - Multiple left turn lanes
 - Signals tied in with railroad crossing signals/railroad preemption
 - Locations with advance warning (red light ahead) beacons
 - Traffic circles with signalization (DC)
- Public safety considerations
 - High crash frequencies
 - Locations with a history of power failures
 - Identified evacuation routes
 - Identified by police as critical
- Signal network considerations
 - Locations with multiple signals controlled by a single controller
 - Locations serving as communication hubs within a network of traffic signals
 - Locations within a coordinated (interconnected) signal system

*Subcommittee meeting of 9/11/2012
Note: Not an official or adopted list.

6

Surveys on Power Back-Ups

- COG/TPB staff conducted 5 surveys of the region's traffic signals agencies regarding traffic signal power issues:
 - Numbers and types of traffic signal power back-up systems in the NCR as of:
 - December 31, 2011
 - June 30, 2012
 - December 31, 2012
 - June 30, 2013
 - Additional survey on the impacts of and use of power back-up systems in the aftermath of the June 29, 2012 derecho storm



7

Previous Survey Results



- Reported proportion of the region's 5,500+ traffic signals with power back-ups

Type of Back-up	12/31/2011	6/30/2012	12/31/2012	6/30/2013
Battery-based	15%	22%	26%	26%
Generator-ready	N/A	42%	50%	61%

- Note: most battery-based systems also have generator-ready features

8

Draft Results of Current Survey

- Responses from jurisdictions below:

	Agency	Battery Based		Generator Ready		Total
DC	DDOT	300	19%	896	56%	1600
Maryland	City of Rockville	40	87%	45	98%	46
	City of Frederick	N/A	N/A	N/A	N/A	N/A
	SHA ¹	47	7%	52	8%	655
	Montgomery County	210	26%	210	26%	800
	Prince George's County ²	188	100%	188	100%	188
Virginia	Arlington	94	34%	199	71%	280
	City of Alexandria	N/A	N/A	N/A	N/A	N/A
	City of Fairfax	41	67%	61	100%	61
	Falls Church	15	58%	26	100%	26
	Leesburg	28	53%	47	89%	53
	Manassas	5	8%	62	100%	62
	VDOT ³	350	26%	1353	100%	1353
	Total	1318	26%	3140	61%	5124
1. Charles, Frederick, and Prince George's Counties 2. Based on previous survey responses 3. NOVA District: Fairfax, Loudoun, and Prince William Counties Information pending from jurisdictions not listed						

9

Updated Findings

- Awareness and continuing consideration of the topic
- Major agency agreement to look at emergency preparedness as a placement criteria and to coordinate on this regionally
 - Several jurisdictions have applied for 2014 UASI funding to improve back-ups along corridors with Homeland Security significance
- New signals equipment when installed now generally includes back-ups as a matter of course
- Initial increase of battery back-up systems (from 15% to 26%) has shifted to greater focus on provisions for generator readiness
- COG/TPB staff will conduct the survey on an annual basis as requested by the Traffic Signals Subcommittee

10

Next Steps

- Conduct new survey as of June 30, 2014
- Explore option to refine data to more clearly define overlap between battery-based and generator ready back-ups
- Explore relationship between power back-ups and TCPs
- Discuss other items of importance that should be considered in future surveys