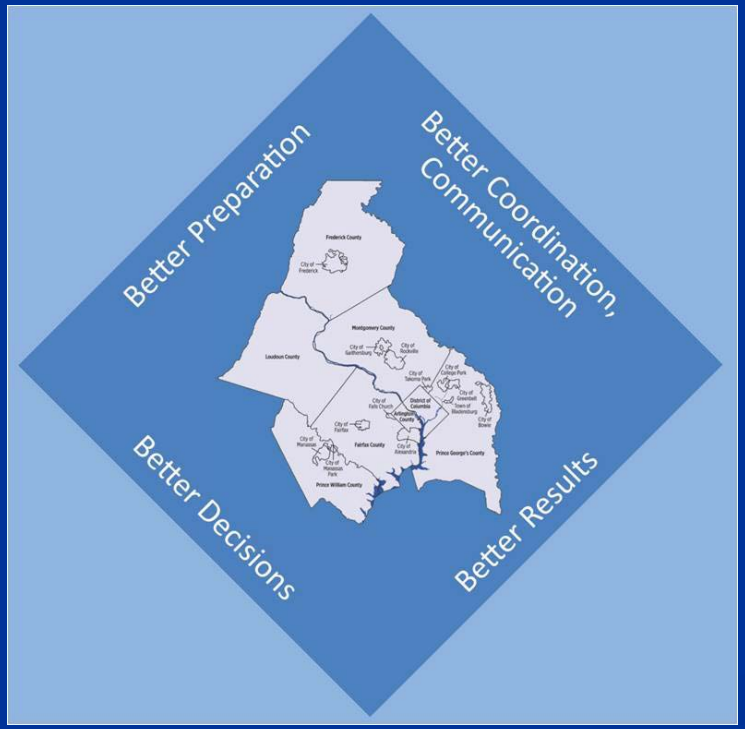
Item #2c

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



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COG/TPB Staff

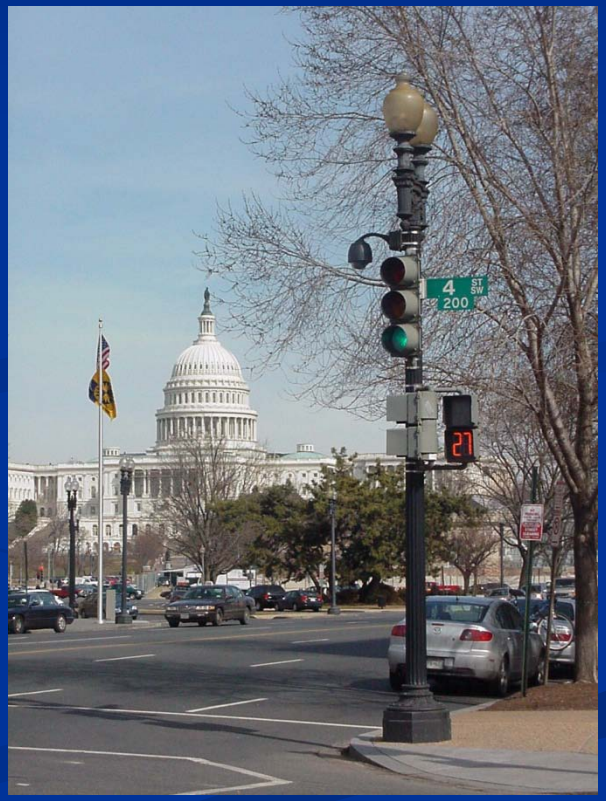
IMR Steering Committee
March 28, 2013

Overview

- IMR recommendation
- About power back-up systems
- Traffic Signals Subcommittee discussions
- Updated COG/TPB surveys results
- Summary of outcomes following from the IMR recommendation

IMR Recommendation

- Conduct an assessment of and expeditiously install back-up power for major traffic signals



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

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

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.

Surveys on Power Back-Ups

- COG/TPB staff conducted 4 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
  - Additional survey on the impacts of and use of power back-up systems in the aftermath of the June 29, 2012 derecho storm

Updated 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
Battery-based	15%	22%	**26%**
Generator-ready	N/A	42%	**50%**

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

Looking Back: the Derecho Storm

- Many signals out in the aftermath of the June 29, 2012 derecho storm
  - Estimated 5-10% of signals
  - Telecommunications outages were also problematic
- Ongoing story of response and recovery
  - Deployment, refueling, replacement of backups
  - Redeployment of generators to the next most important location as signals came back onto utility power
- May have helped further encourage installation of back-up systems

Summary of Outcomes Following the IMR Recommendation

- 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
  - Coordinating from a technical standpoint, but regionally "pooled" funding/procurement not seen to be advantageous
- New signals equipment when installed now generally includes back-ups as a matter of course
- Overall increase of back-up systems installed in the region (e.g. from 15% to 26% for battery back-ups) since the IMR Recommendation was formulated