

How We Got Here

Part 1: The History of Electricity in the District

Summarized by SEPA



PUBLIC SERVICE COMMISSION
of the District of Columbia



(Washington, DC View East Down F Street NW)



The Original Electric Vehicle to Grid Service

- Electricity first served the demand of electric streetcars
- Excess power from the streetcars was converted to electricity and sold to business and residential customers
- Pepco was founded in 1896 by Washington Traction and Electric Company, a private street car company, to pioneer electricity delivery by moving excess power from streetcars to business and residential customers.

Source: Sharpe, C. Melvin, 'Brief Outline of the History of Electric Illumination in the District of Columbia,' *Records of the Columbia Historical Society*, Columbia Historical Society, 1949.

A Restructured Energy Market



- **1913:** District of Columbia Public Service Commission formed
- **1913-1996:** Pepco operated as the fully vertically integrated de facto monopoly utility (G, T, & D w/ rates regulated by Commission)
- **1996:** FERC Order #888 allows third-parties to use Pepco's transmission lines and opens up competitive retail electricity supply markets.
- **1996:** Pepco divested from generation assets and became distribution-only
- **1999:** Retail Electric Competition and Consumer Protection Act of 1999 enabled customer choice of electricity suppliers

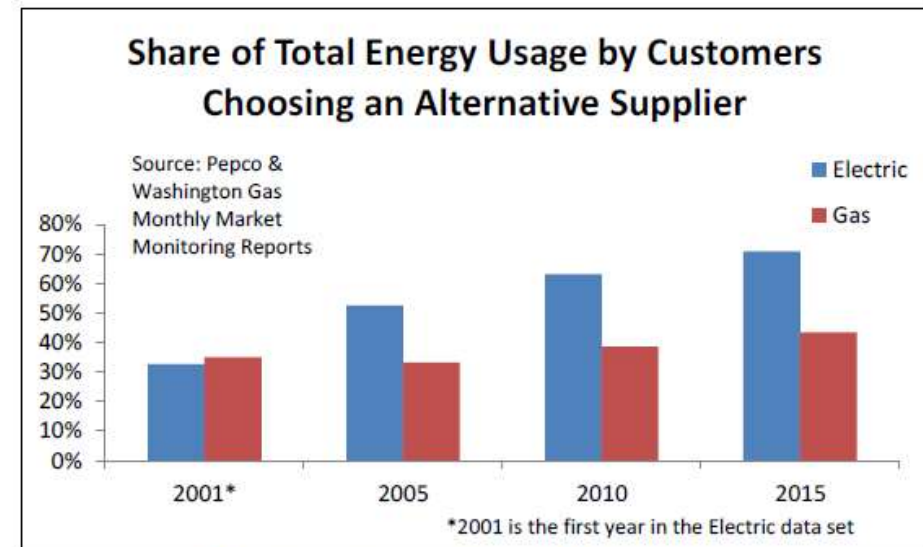


FIGURE 1: ENERGY USAGE BY AES CUSTOMERS

Source: DCPSC MEDSIS Staff Report, 2017



Evolution of Energy Markets: Distributed Energy Resources (DERs)

- **1999 Act envisioned “increased efficiencies” to serve customers**
- **Wholesale market and distribution system relies heavily on centralized electricity generation**
- **Increase DERs and DG:**
 - Enable customers to own electricity and drives utility to be customer-centric
 - Decreases reliance on wholesale market
 - Changing role of the transmission and distribution systems
 - Increases the need for interconnectedness of electricity and key sectors and critical infrastructure
- **MEDSIS initiative is meant to reassess the electricity delivery system in the District and sustain the vision of the 1999 Act with a goal of increasing efficiencies.**

Present Day Energy System in D.C.



- Federal government exceeds 26% of D.C. electricity usage
- U.S. GSA is Pepco's largest customer
- Major hospitals and military installations
- Nearly 100% Pepco's meters have AMI
- Policy promoting renewables
 - RPS and Community Shared Renewables



FIGURE 2: THE DISTRICT OF COLUMBIA'S EXISTING ENERGY SYSTEMS⁴³

Source: DCPSC MEDSIS Staff Report, 2017

Grid Mod Efforts Across the Country



TABLE 2: ENERGY DELIVERY MODERNIZATION EFFORTS IN OTHER JURISDICTIONS

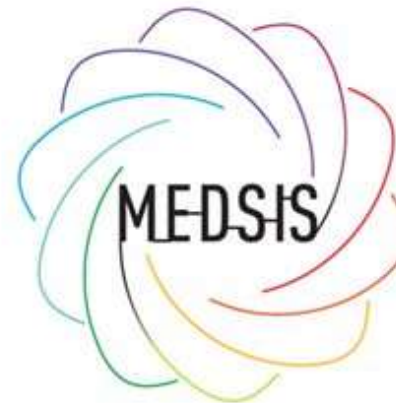
Energy Delivery Modernization Efforts in Other Jurisdictions	
(1)	New York – Reforming the Energy Vision (NY REV) (14-M-001);
(2)	Minnesota – e21 Initiative and Distribution Planning Investigation;
(3)	California – the Energy Storage Framework & Procurement (R1503011) and the Distribution Resources Plan (R140810);
(4)	Hawaii – the Investigation into Distributed Energy Resources Policies (2014-0192),
(5)	Illinois – the Microgrid Pilot Program in ComEd’s Service Territory;
(6)	Vermont – the Green Mountain Power and Tesla Behind the Meter Storage Pilot;
(7)	Connecticut – the Demonstration Projects for Grid-Side System Enhancements to Integrate Distributed Energy Resources; and
(8)	Georgia – the Value of Distributed Energy Resources for Georgia Power 2016 Integrated Resource Plan (39732).
(9)	Maryland - Public Conference 44, In the Matter of Transforming Maryland’s Electric Distribution Systems to Ensure that Electric Service is Customer-Centered, Affordable, Reliable, and Environmentally Sustainable in Maryland, Notice of Public Conference.
(10)	Rhode Island – Docket No. 4600 – Investigation into the Changing Electric Distribution System (3/3/16)

Source: DCPSC MEDSIS Staff Report, 2017

How We Got Here

Part 2: The History MEDSIS

Summarized by SEPA

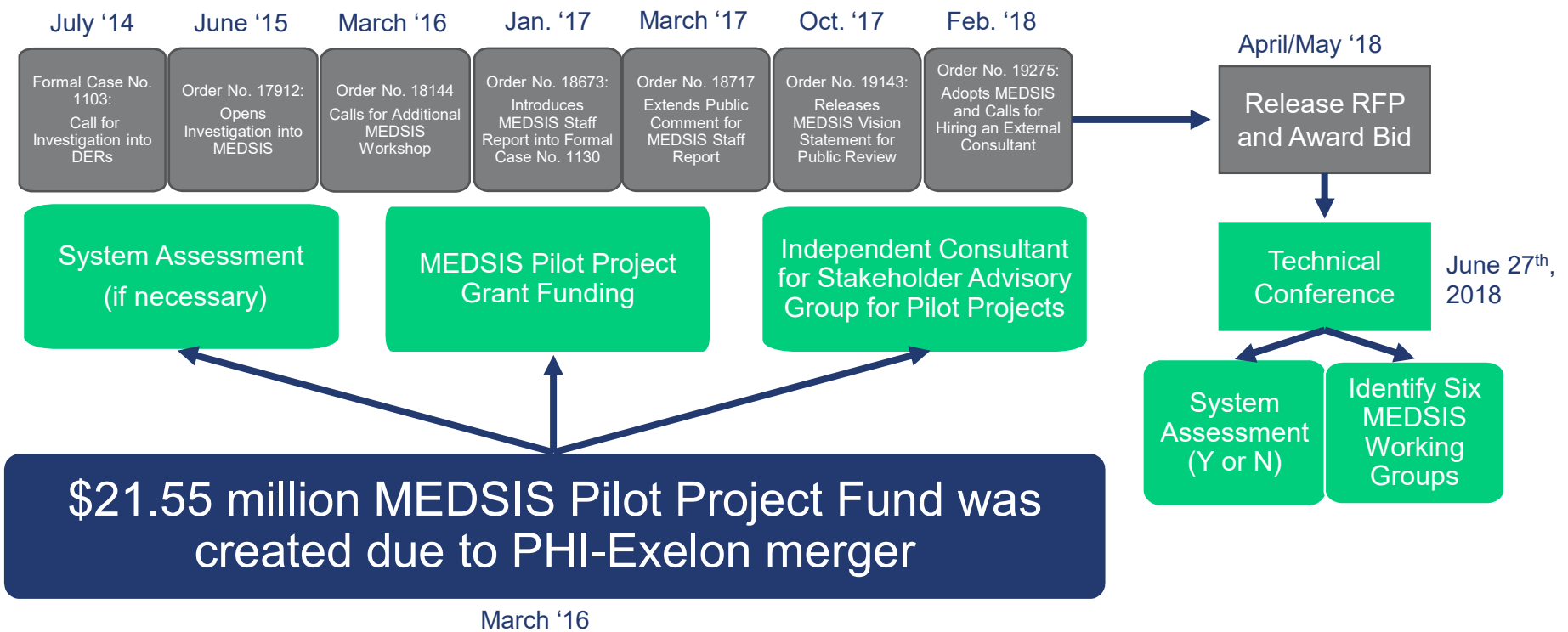


Modernizing the Energy Delivery System for Increased Sustainability



PUBLIC SERVICE COMMISSION
of the District of Columbia

Overview of MEDSIS



Introducing MEDSIS (2014 to mid-2015)



4/9/15: DC Climate Action and the Advisory Neighborhood Commission request the Commission to convene expedited working groups to investigate DERs

6/12/15: **Order No. 17912** opens to investigate MEDSIS

7/10/14: As part of a formal case in Pepco's rate proceeding, **Formal Case No. 1103**, GRID2.0 and Sierra Club request the Commission to investigate DERs to improve Pepco's grid.

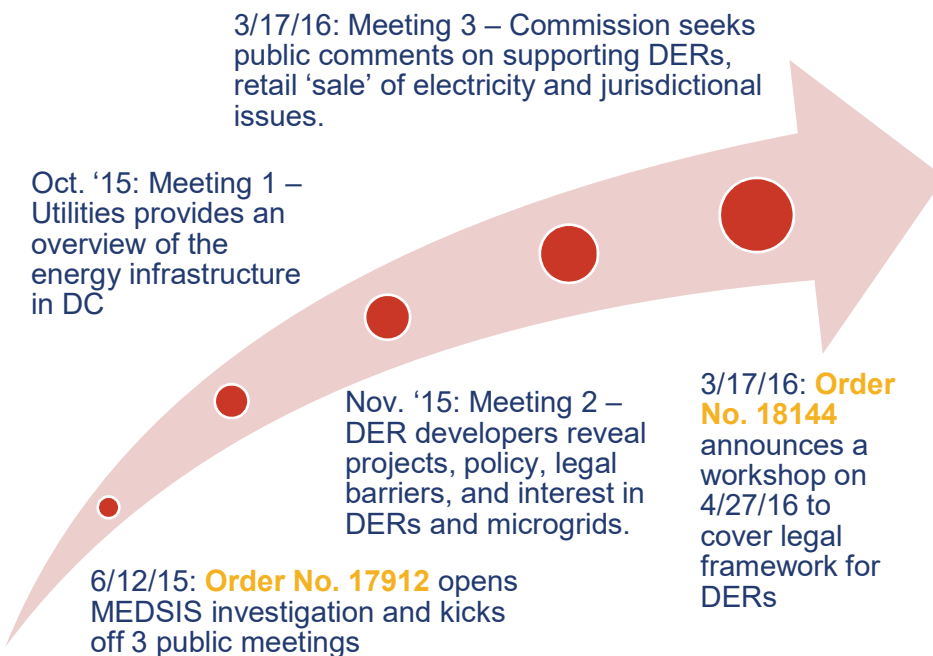
Scope:

1. Distribution system
2. Plans to modernize system
3. New technologies impacting system
4. ID technologies, policies and regulatory issues for grid modernization
ex) energy storage, DERs, electric vehicles, microgrids, and management system technologies

Next Steps:

1. Comments by 8/31/2015
2. Kickoff Workshop on 9/22/2015

Investigating MEDSIS (mid-2015 to 2016)



Scope:

1. MEDSIS Staff Report
2. MEDSIS Vision Statement
3. Other states' grid modernization
4. Full system assessment
5. Independent consultant for stakeholder facilitation

Next Steps:

1. 2/28/2017 MEDSIS Town Hall Meeting
2. Seek public comment

Investigating MEDSIS (2017)



Scope:

1. MEDSIS Staff Report
2. MEDSIS Vision Statement
3. Other states' grid modernization
4. Full system assessment
5. Independent consultant for stakeholder facilitation

Next Steps:

1. Seek public comment
2. Finalize MEDSIS Vision Statement
3. Determine if Hiring Consultant

Implementing MEDSIS (2018)

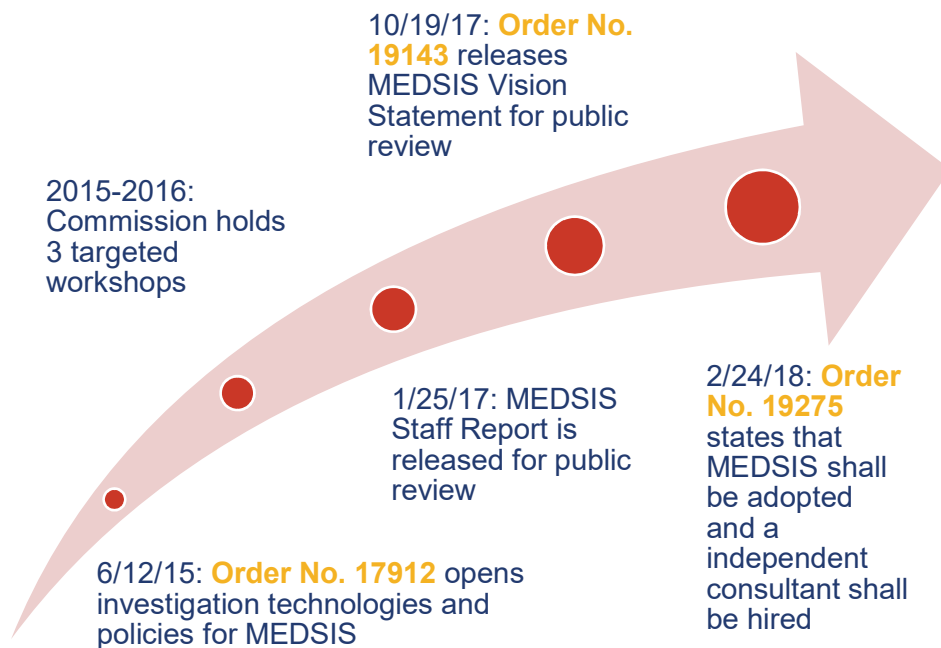


Scope:

1. Adopted MEDSIS Initiative
2. Decided to hire external consultant

Next Steps:

1. Release RFP to retain consultant



MEDSIS Staff Report (January 25, 2017)



- Section I: Introduction of MEDSIS Initiative
 - Background on commission, electric company, DC critical infrastructure, staff role
- Section II: Specific characteristics of DC energy delivery system and overview of other grid mod efforts
 - Uniqueness of DC
 - Single utility (Pepco).
 - Greater # of critical infrastructure due to federal gov't
 - 100% AMI meters
 - Large single customer (federal gov't)
 - Other grid mod efforts aren't very relevant due to DC's uniqueness, though best practices may still be gleaned from states like NY, MN, HI, CA, IL, CT, etc.
- Section III: Concurrent commission proceedings related to MEDSIS
 - List of reports, rulemakings, and dockets. Such as NEM rule, VoS report, Approval of Pepco Infrastructure improvements.
- Section IV: Overview of 3 public workshops (summary provided in Workshop Summary Document)
- Section V: Legal and regulatory aspects of MEDSIS
 - Existing regulatory framework: interconnection rules, rules governing generation facilities, etc.
 - Definition of DERs including
 - DG, Energy Storage, EE, DR, Microgrids
 - Recommendation for NOPR to adopt definitions
- Recommendation to issue NOPR to adopt streamlined notice of construction rules for renewable GF approvals w/in 20 days
- Recommendation to issue NOPR so that "electric company" excludes behind the meter generators
- Section VI: Economic aspects of MEDSIS
 - Call for WG to assess system capacity and projected demand growth in order to optimize investment
 - Discussion of demand management.
 - Discussion of Tame-varying rates
 - Discussion of standby tariff
 - Discussion of revenue decoupling
 - Discussion of how to evaluate the cost effectiveness of DERs
 - Discussion of Performance-based ratemaking
 - Discussion of future evolution of distribution system
- Section VII: Plan for using funding to form a stakeholder advisory group for distribution pilot projects
 - \$21.55 million MEDSIS Pilot Project Fund was created due to PHI-Exelon merger
 - MEDISS Pilot Project Grant Funding Qualifications Parameters have been recommended.
 - Timelines have been recommended.
- Section VIII: Next Steps of the MEDSIS Initiative

MEDSIS Vision Statement (February 14, 2018)



“The District of Columbia’s modern energy delivery system must be sustainable, well-planned, encourage distributed energy resources, and preserve the financial health of the energy distribution utilities in a manner that results in an energy delivery system that is safe and reliable, secure, affordable, interactive, and non-discriminatory.”

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**Smart Electric
Power Alliance**