



# Green Storage Initiative (GSI)

2020 Review and 2021 Plans

Presented by Wayne M. Adams

GSI Chair

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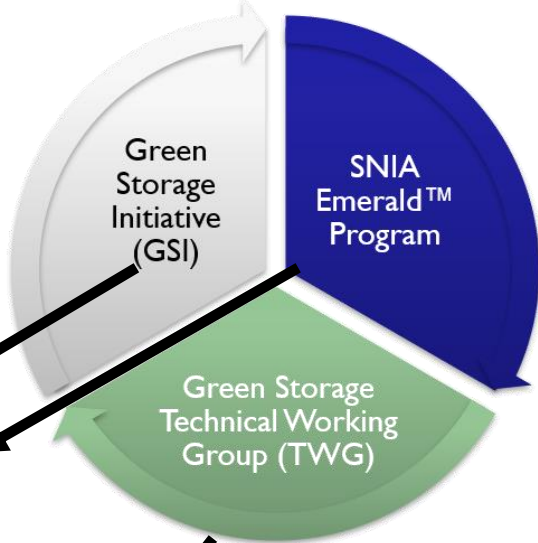
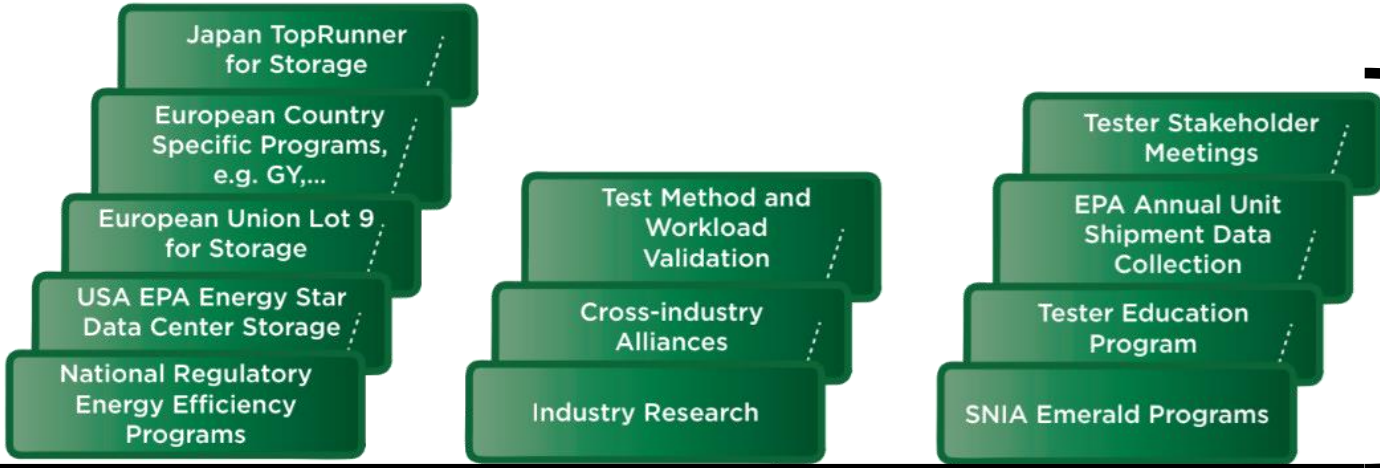
<https://www.snia.org/technology-focus/power-efficiency>

# Green Storage Initiative (GSI) Mission

<https://www.snia.org/forums/green>

SNIA Initiative where SNIA members collaborate on market requirements, education, alliances, and events to promote energy efficient storage and the SNIA Emerald Program

SNIA program to promote usage by vendors and test labs of the SNIA Emerald Test Specification and for IT professionals to reference energy usage metrics for storage vendor products to aid storage system procurement planning and optimization of IT storage operations



SNIA committee of technical storage system experts defining storage system energy measurement methodology, energy usage-related metrics, technical specifications, and best practices



**SNIA Emerald™ Power Efficiency Measurement Specification for Enterprise Storage Systems**  
**ISO/IEC 24091 - Information Technology - Power Efficiency Measurement Specification for Data Center Storage**

# GSI Work Items (slide 1 of 2)

## 2020 Accomplishments

- Emerald 4.0 Industry Training and Tester Kit
- Renew TGG/SNIA Alliance Agreement
- Industry Stakeholder Meeting
- EPA DCS Block IO thresholds
- VdBench assurances
- Data Analysis
- EPA Unit Shipment Report

## 2021 Plans

- EPA Energy Star DCS 2.0/Emerald 4.0 Data Analysis
- TGG Alliance / EU regulations
- TGG/SNIA updated storage whitepaper
- Test method for solid state AFA
- Emerald 4.x stakeholder meeting, requirements, 18 mo. roadmap
- Japan Top Runner
- EPA Unit Shipment Report
- Next version tbd ISO submission



# EPA Energy Star Testing

1 2021 232 test reports (DCS v1.0/v1.1)  
 9 2017 163 test reports  
 DCS v2.0 thresholds required March 2021

**D**

- DELL (41)
- DELL EMC (34)
- Dell EMC Unity XT 480F (1)
- Dot Hill Systems Corp. (9)

**H**

- Hewlett Packard (4)
- Hewlett Packard Enterprise (3)
- Hitachi (2)
- HP (1)
- HP StoreServ (5)
- HPE 3PAR StoreServ (5)
- HPE Nimble Storage (1)
- HPE Primera (3)
- HPE StoreVirtual 3200 (1)

**N**

- NEC; HITACHI (1)
- NEC; Storage Engine; Scale Logic, Inc. (1)
- NetApp (1)
- NetApp, Inc (37)
- NetApp, Inc. (6)

**P**

- Pure Storage (1)
- Pure Storage, Inc. (2)

**S**

- Seagate (16)

**V**

- Veritas (2)
- Veritas Technologies LLC (1)

**E**

- EMC VNX5400 (1)
- EMC VNX5600 (1)
- EMC VNX5800 (1)
- EMC VNX7600 (1)

**I**

- IBM (11)

**L**

- Lenovo (22)
- Lenovo Ltd. (8)

**F**

- Fujitsu (1)

**Storage Controller Configuration**

- Scale-Out Storage (39)
- Scale-Up Storage (185)

**Workload Optimization Type**

- Capacity (22)
- Composite (9)
- Streaming (101)
- Transaction (122)

**Storage Model Connectivity**

- Block I/O (188)
- Block I/O and Network Attached Storage (NAS) (27)
- File I/O (9)

**Capacity Optimized Method Available (COMs)**

- Thin Provisioning (143)
- Data Deduplication (46)
- Compression (39)
- Delta Snapshots (130)
- None (0)

ENERGY STAR Certified CHANGE product category

## Data Center Storage

Visit the [Data Center Storage](#) page for usage tips and buying guidelines.

Filter Your Results 163 Records Found sort by: Brand Name ↑↓

**D**

- DELL (41)
- Dell EMC (8)
- Dot Hill Systems Corp. (9)

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- Hewlett Packard (4)
- Hewlett Packard Enterprise (3)
- Hitachi (2)
- HP (1)
- HP StoreServ (5)
- HPE 3PAR StoreServ (4)
- HPE StoreVirtual 3200 (1)
- HUAWAI (1)

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- Lenovo Ltd. (8)

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# GSI Work Items (slide 2 of 2)

## GSI Alliances and Cross Industry Work

### Technology and Testing

- SPEC (SFS), Oracle (Vdbench (SPC community)), SPEC (power meters), S-FLOW, 80 Plus Ecova/EPRI (power supply testing)

### Policy

- The Green Grid (+Digital Europe) (EU, EU country level pgms)
- SNIA-J (Japan)

### Industry Regulatory

- EPA Energy Star
- TopRunner (via SNIA-J)
- EU Lot 9 ( via TGG → Digital Europe), Blue Angel, others

### International Standards

- SC39 / ITS 39

## GSI/GreenTWG Cross-SNIA Group Collaboration

### ■ SMI/SSM TWG

- Storage Management profiles for power, capacity, I/O
- Profiles requests to support DCIM

### ■ S3 TWG/CMSI

- Solid state storage taxonomy
- S3 Test Methods/data collection

# GSI Membership as of 1/1/2021

Green Storage Initiative • Member Companies



## Membership Dues 2021

Voting dues = \$12K

Non-voting dues = \$6K

## ■ GSI Leadership:

- Chair, Wayne M. Adams, Independent Consultant
- SNIA Emerald Program Manager , Dave Thiel , Contractor
- SNIA Emerald Data Analysis, Patrick Stanko, Contractor

# GSI Participation

- What is the expected industry impact of this work
  - One architecturally unbiased test methodology to serve regulatory bodies worldwide
  - Proactively provide a single test methodology worldwide
  - Industry knowledge of storage system power consumption and best practices/configurations to optimize power usage w/o compromising system functionality
- What is the industry segment relevance.
  - Storage System Manufacturers; Storage Device Manufacturers; DCIM SW Vendors
- Why you should join and participate in GSI
  - Membership fees underwrite critical contractor services for program mgt, data analysis, test validation, and industry training; industry awareness of your company's leadership
  - Start new work to address ODM/device level requirements
  - Refresh and renew focus on best practices (whitepapers, planning tools)
  - Avoid being surprised when a new regulation goes live and affects your product portfolio/revenues
- Who to contact for additional information
  - GSI Chair, Wayne M. Adams, [waynemadams@gmail.com](mailto:waynemadams@gmail.com)
  - GSI SNIA Emerald Program Manager, David Thiel, [emerald@snia.org](mailto:emerald@snia.org)