

**GAF** Commercial

# Data Center Solutions



GAF Commercial provides durable, sustainable, and operationally efficient roofing systems to help protect your data center.

We protect what matters most™

**GAF**



# Build critical structures with **a trusted partner**

Data is more than a commodity. It's a commitment. A data center service interruption impacts more than one organization's bottom line. It potentially affects businesses, homes, schools, hospitals, and more, throughout the region and even worldwide.

At GAF, we protect what matters most. As the largest roofing manufacturer in North America, we bring more than 135 years experience to the job of protecting homes, businesses, factories, warehouses and — of course — data centers.

You can be confident that a roofing system from GAF, proven in the field, tested in the lab, and installed by GAF certified contractors, can help mitigate the risks around the most important data center performance metrics: downtime and energy efficiency.

# Mission Critical Structure

## NDL Roof Guarantee



The specific needs and vulnerabilities of data centers call for a specific roofing guarantee. The GAF Mission Critical NDL Guarantee\* offers extended protection against the types of weather conditions that could lead to outage and downtime. As an added value to your Mission Critical Structure NDL Roof Guarantee GAF has included inspections at years 2, 5, 10, 15, 20, and 25 of the guarantee.

### Quick Reference Guide:

### 25-Year GAF Mission Critical Data Center Single-Ply Guarantee

Components and Mandatories			Additional Coverage		
Membrane Type	Membrane Attachment	System Requirements	Wind	Hail	Puncture
60 Mil — PVC, PVC (KEE), TPO, TPO Extreme	Induction Weld	■ Min ½" Coverboard	90 mph	1"	16 Hours
80 Mil — PVC, PVC (KEE), TPO, TPO Extreme	Induction Weld	■ Min ½" Coverboard		1"	32 Hours
60 Mil — PVC, PVC FB, PVC (KEE), PVC (KEE) FB, TPO, TPO Extreme	Adhered	■ Min ½" Coverboard — Adhered		2"	16 Hours
60 Mil — TPO FB, TPO Extreme FB, PVC KEE FB	Adhered	■ ½" HD Polyiso or HD Polyiso Plus — Adhered ■ Min ⅝" Coverboard — Mechanically Fastened (Steel Deck) or Adhered (Concrete Deck) ■ 1 Ply RUBEROID® Mop Smooth in MATRIX™ 101 (Heat-Welded Side and End Laps)		2"	32 Hours
60 Mil — TPO FB, TPO Extreme FB	Adhered	■ Min ⅝" Coverboard — Mechanically Fastened ■ ½" HD Polyiso or HD Polyiso Plus — Adhered		3"	32 Hours
80 Mil — PVC, PVC FB, PVC (KEE), PVC (KEE) FB, TPO, TPO Extreme	Adhered	■ Min ⅝" Coverboard — Adhered	120 mph†	2"	32 Hours
80 Mil — TPO FB, TPO Extreme FB	Adhered	■ Min ⅝" Coverboard — Mechanically Fastened ■ ½" HD Polyiso or HD Polyiso Plus — Adhered		3"	48 Hours



View Sample Mission Critical  
Structure NDL Roof Guarantee

\* Systems must be installed by GAF GoldElite™ Commercial Contractors and GAF PlatinumElite™ Commercial Contractors in order to be eligible for GAF guarantees. Additional requirements apply. Refer to the applicable Application & Specification Manual, available at [gaf.com](http://gaf.com), for current requirements. See specimen copies of *Mission Critical Structure NDL Roof Guarantee*, *Diamond Pledge™ NDL Roof Guarantees* and *System Pledge™ Roof Guarantees*, available at [gaf.com](http://gaf.com), for complete coverage and restrictions.

† Coverage of 100 mph or greater requires the use of an approved GAF Perimeter Edge Metal. Contact GAF for additional information and requirements. See specimen copies of *Diamond Pledge™ NDL Roof Guarantees* and *EverGuard® Diamond Pledge™ NDL Roof Guarantee Enhanced Wind Coverage* available at [gaf.com](http://gaf.com), for complete coverage and restrictions.

Additional requirements may apply. Contact GAF for more information. For complete coverage and restrictions, refer to the *Mission Critical Structure NDL Roof Guarantee* document.

# Roof reflectivity can impact your **cooling costs**\*

By absorbing less solar energy, a reflective roof can help lower the amount of energy needed to keep a building interior cool, potentially reduce cooling costs, and help support operational efficiency goals.†

GAF offers highly reflective and emissive membrane systems — such as White PVC or PVC KEE — that are rated by the Cool Roof Rating Council for solar reflectance and thermal emittance.\*

## Sustainability Ratings/Certifications



The ratings below are subject to CRRC rating program conditions, requirements, and limitations. Visit [coolroofs.org](http://coolroofs.org) for important information and disclaimers about CRRC rating conditions, requirements, and limitations.

Product ID#	Type	Solar Reflectance	Thermal Emittance	Solar Reflectance Index (SRI)
	ASTM Test Method	ASTM C1549	ASTM E903	ASTM E903
PVC White 0676-0134a	Initial	0.87	0.87	110
	Aged	0.70	0.88	86
White 0676-0135a	Initial	0.86	0.86	109
	Aged	0.78	0.87	96
PVC KEE Tan 676-0165	Initial	0.73	0.88	89
	Aged‡	0.62	0.88	74
Gray 0676-0166	Initial	0.57	0.88	67
	Aged‡	0.50	0.88	58
Energy Gray 0676-0158	Initial	0.73	0.90	90
	Aged	0.66	0.88	80

Note: Based on GAF's internal testing. Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide.

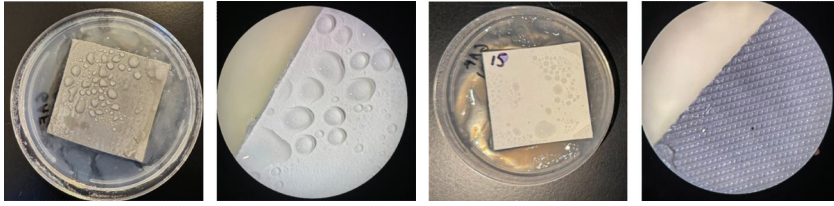


Scan here for GAF listings on Cool Roof Rating Council's website

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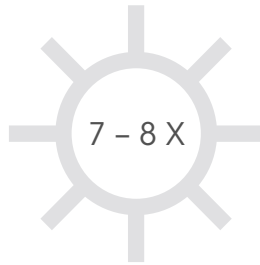
† Energy cost savings are not guaranteed and the amount of savings may vary based on climate zone, utility rates, radiative properties of roofing products, insulation levels, HVAC equipment efficiency, and other factors.

‡ CRRC Rapid Ratings: Interim laboratory-aged values that simulate naturally aged values and will be replaced by the measured three-year naturally aged values upon completion of the weathering process.



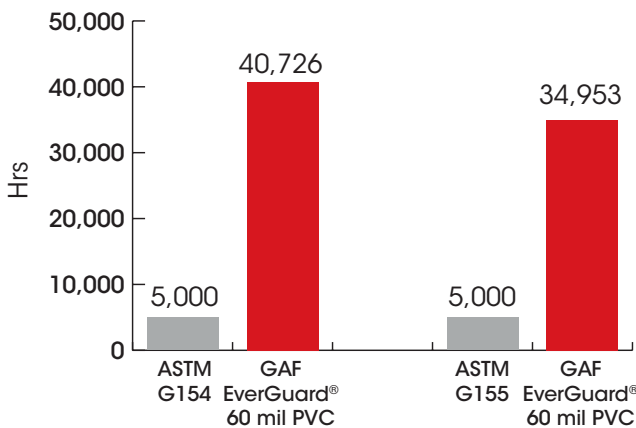
**GAF recently completed internal testing of our EverGuard® PVC and EverGuard® PVC KEE Membrane performance around UV protection, mold resistance, and solar reflectance.**

The results place us consistently well above ASTM standards. See product data sheets on GAF.com for more of our tested values and performance.



**Weathering Performance**

- GAF EverGuard® PVC exceeded the ASTM G154 standard by more than **8X at 2X irradiance**.
- GAF EverGuard® PVC exceeded the ASTM G155 standard by nearly **7X at 2X irradiance**.



Tested internally in accordance with ASTM Standards.



**Why is biocide important?**

3-year outdoor exposure at a Tampa third-party testing facility show that GAF EverGuard® PVC/PVC KEE, with our integrated biocide, helps significantly resist mold/fungi growth. That helps the roof remain clean, and the loaded biocide package also helps prevent the accelerated roof degradation mold can cause.

Primarily, that means potentially lower cooling costs due to higher solar reflectivity. Specifically:

- According to published CRRC data, EverGuard® PVC KEE White outperformed all competitors in CRRC 3-year SR/SRI ratings (0.78/96) as well as top tier 3-year thermal emittance (0.87) (CRRC Listing: 0676-0135a)\*
- EverGuard® PVC White maintained a 3-year SRI of 0.70. It also helps protect your roof asset in a number of ways\*:
  - Less staining/discoloration of the membrane
  - Helps lower the risk of localized weakening of the membrane
  - Helps lower membrane cleaning costs



\* Based on GAF's internal testing. Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide.

# Meeting sustainability goals




Evolving local, state, and federal laws are increasingly requiring sustainability compliance and disclosures, especially as related to large-scale operations such as data centers.

When it comes to compliance, disclosures, and achieving specific goals, the devil is in the *data*.

Our wide range of energy-efficient roofing products has been engineered to provide long-term durable protection of building structures, maximize reuse and recycling of materials, and help increase energy efficiency\*. We also offer an unmatched level of product transparency to help you achieve green building certification. At time of publication, GAF offers:

- 300+ products with third-party disclosures and sustainability certifications
- Product-specific Environmental Product Declarations (vs. other manufacturers that offer "industry-average" EPDs.)
- Compared to other similar roofing system assemblies, choosing GAF systems can lead to an overall reduction in the building's embodied carbon. For example, GAF EverGuard® PVC and EnergyGuard™ Polyiso systems have up to 46% lower embodied carbon than industry-average PVC and polyiso systems.

## Fast facts about GAF products commonly specified for Data Center roofing systems:

	Energy Savings	Recycled Content	Sustainability Documents
<b>EverGuard® PVC Membrane</b> Highly reflective and emissive, GAF White PVC and TPO membrane roofs reduce the urban heat island effect.	5%	Product-specific Environmental Product Declarations (EPDs), GreenCircle Recycled Content Certifications, and GreenCircle's Life Cycle Assessment (LCA) Optimized Certification	
<b>EverGuard® TPO Membrane</b>	4 - 10%	Product-specific Environmental Product Declarations (EPDs), Declare Labels, GreenCircle Recycled Content Certifications	 <b>Declare.</b>
<b>EnergyGuard™ Polyiso Insulation</b> Polyiso insulation offers the highest R value per inch compared to any other type of non polyiso insulation of equivalent thickness.	12 - 48%	Product-specific Environmental Product Declarations (EPDs), Health Product Declarations (HPDs), Declare labels, GREENGUARD Gold Certifications and GreenCircle Recycled Content Certifications, and GreenCircle's Life Cycle Assessment (LCA) Optimized Certification. PLUS a full line of TCPP-Free, Red List-Free Polyiso	



Achieving green certifications can be daunting. That's why GAF makes our extensive sustainability documentation — including Environmental Product Declarations (EPDs), GREENGUARD Gold certifications, Recycled Content Certifications, Health Product Declarations (HPDs), and Declare labels — easy to access. Get the interactive GAF Spec Advisor here.

\* Energy cost savings are not guaranteed and the amount of savings may vary based on climate zone, utility rates, radiative properties of roofing products, insulation levels, HVAC equipment efficiency, and other factors.



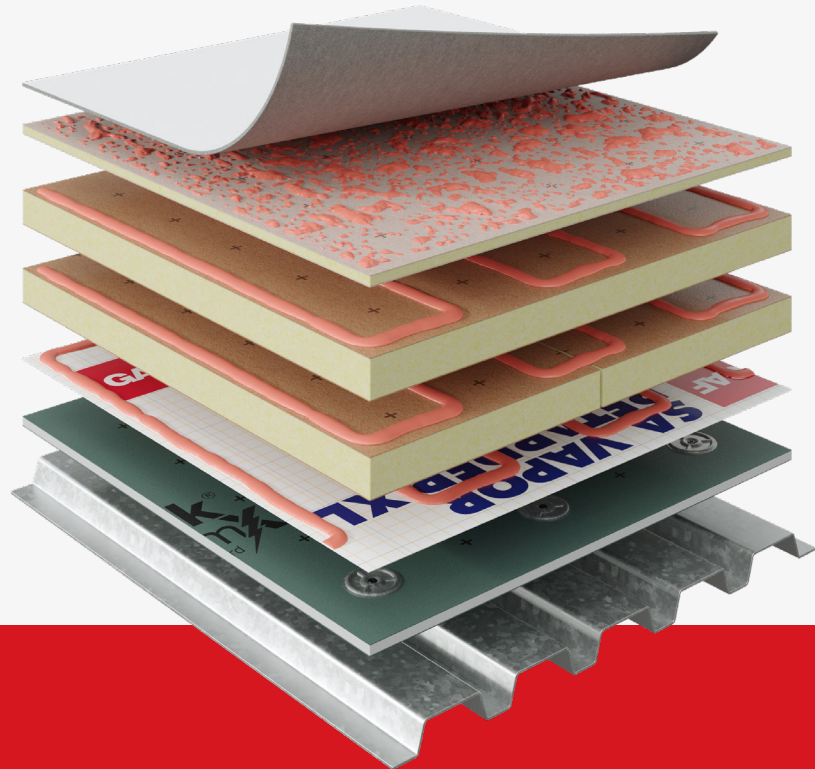
## Durability to help prevent downtime and outages

GAF offers a wide variety of durable roofing solutions engineered to protect mission-critical structures from the damaging effects of weather events and other challenges that can lead to expensive facility downtime and outages.

For example, the GAF range of hybrid PVC/TPO/Asphaltic roofing assemblies offer a combination of structural redundancy and UV protection, while our Very Severe Hail-rated PVC Fleece-Back roofing systems are suited for hail-prone regions such as the mid- and south-west, where many data centers are located.

# Solutions for Data Center Challenges

Depending on your location, your Data Center structure may face a variety of anticipated internal and/or external challenges. GAF offers a wide variety of approved assemblies to address concerns from fire to wind, and impact to foot traffic. See samples below.



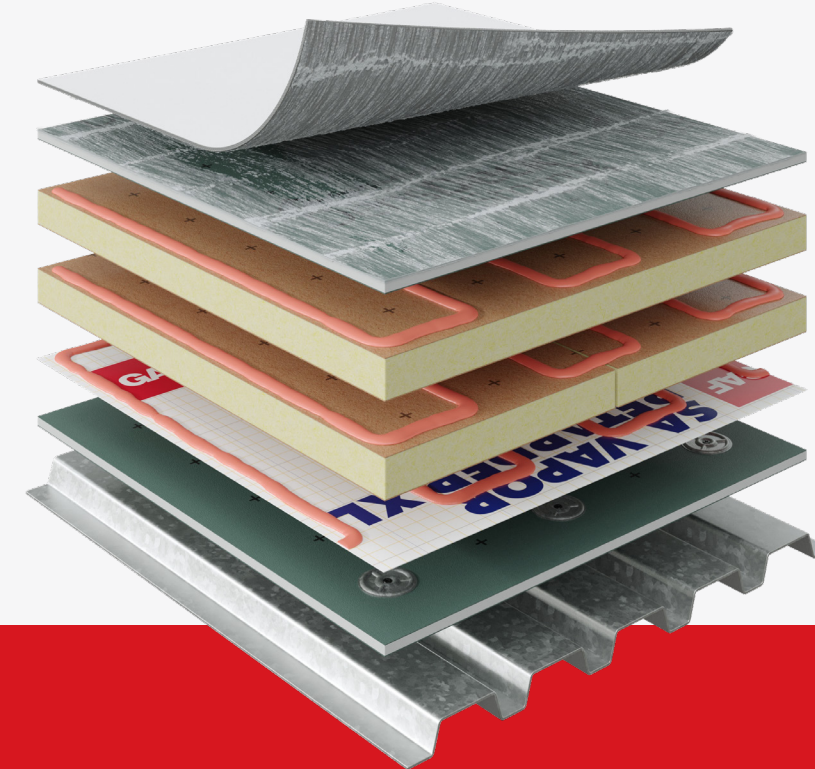
Anticipated Challenge:

## Fire Protection

Class A Fire Rating

### Recommended Assembly:

- EverGuard® PVC KEE 60 mil Fleece-Back Membrane
  - When tested in accordance with Class A E108, specific EverGuard® PVC roofing assemblies demonstrated the capability to extinguish even when the flame source remains applied to the assembly
- EnergyGuard™ NH HD Polyiso Cover Board
  - Adhered with Low Rise Foam
  - Formulated with TCPP-Free non-halogenated fire retardant.
  - Mechanically attached with Drill-Tec™ fasteners and plates.
- EnergyGuard™ NH Polyiso (x2)
  - Adhered with Low Rise Foam
- GAF SA Vapor Retarder XL
- DensDeck® Prime Gypsum Board
  - Mechanically attached with Drill-Tec™ fasteners and plates.
  - Formulated with TCPP-Free non-halogenated fire retardant.
- Up to 25 year NDL Guarantee\*



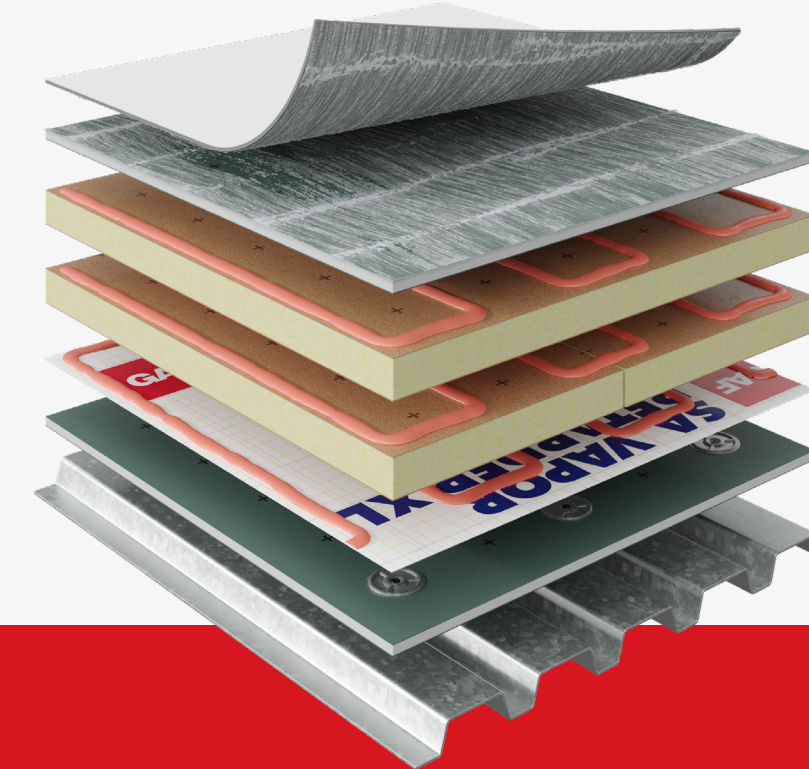
Anticipated Challenge:

## Very Severe Hail

FM 4470 — Very Severe Hail (Class 1-VSH)

### Recommended Assembly:

- EverGuard Extreme® TPO 60 mil
  - Adhered with EverGuard® TPO Quick Spray Adhesive
- DensDeck® StormX™ Prime Roof Board
  - Adhered with Low Rise Foam
- EnergyGuard™ Polyiso Insulation
  - Adhered with Low Rise Foam
- GAF SA Vapor Retarder XL
- DensDeck® Prime Gypsum Board
  - Mechanically attached with Drill-Tec™ fasteners and plates
- Up to 25 year NDL Guarantee\*
- Available puncture coverage<sup>†</sup>:
  - Up to 3" hail, up to 32 hours with 60 mil membrane
  - Up to 3" hail up to 48 hours with 80 mil membrane

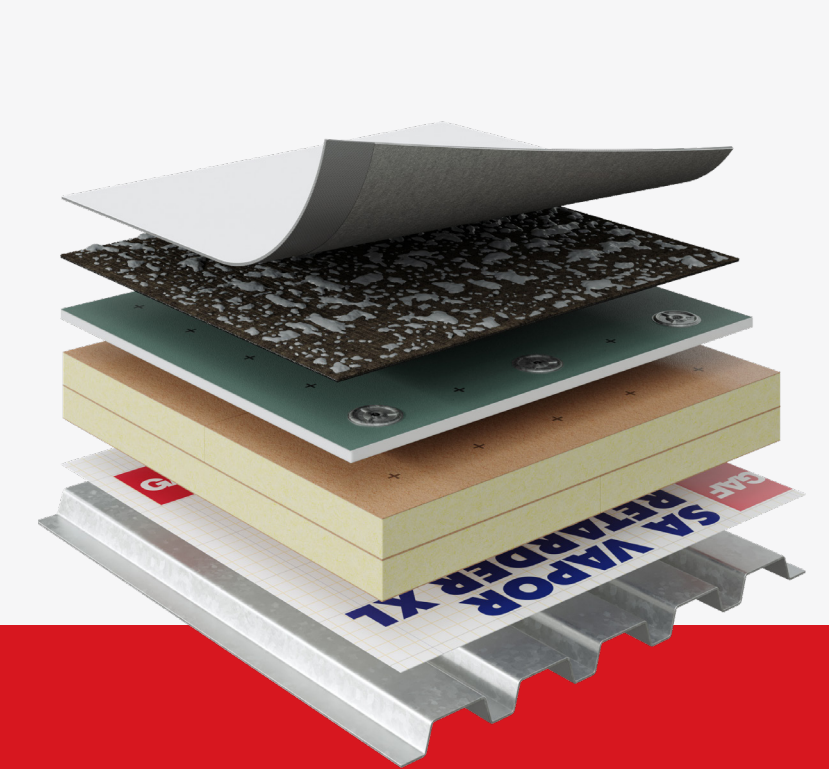


Anticipated Challenge:

## Severe Wind

**Recommended Assembly:** PVC adhered to eliminate exposed fasteners and evenly distribute wind pressure across the membrane

- EverGuard® PVC 60 mil
  - Adhered
- DensDeck® Prime Gypsum Board
  - Adhered with Low Rise Foam
- EnergyGuard™ Polyiso Insulation
  - Adhered with Low Rise Foam
- GAF SA Vapor Retarder XL
- DensDeck® Prime Gypsum Board
  - Mechanically attached with Drill-Tec™ fasteners and plates.
- Up to 25 year NDL Guarantee\*
- Available Wind coverage<sup>†</sup>:
  - 90 mph w/ 60 mil PVC
  - 120 mph w/ 80 mil PVC



Anticipated Challenge:

## Ultimate Durability

**Recommended Assembly:** Fleece-Back PVC or PVC KEE membrane over an SBS asphaltic modified-bitumen membrane offers multi-layer durability.

- EverGuard® PVC Fleece-Back 60 mil
  - Adhered with GAF LRF Adhesive XF to eliminate exposed fasteners and evenly distribute wind pressure across the membrane
- RUBEROID® HW Smooth Membrane with a resilient polyester mat core to resist splits and tears
- DensDeck® Prime Gypsum Board offers rigidity and additional durability. Mechanically attached.
- EnergyGuard™ NH Polyiso (x2)
  - Formulated with TCPP-Free non-halogenated fire retardant
- GAF SA Vapor Retarder XL
- Up to 25 year NDL Guarantee\*



For more options, visit [gaf.com/plan-design/data-center-roofing-solutions](https://gaf.com/plan-design/data-center-roofing-solutions)

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