

# Mathias Laboratory: Facts & Figures

The Charles McC. Mathias Laboratory is designed to be the Smithsonian's most environmentally sustainable building to date, and the first Smithsonian building to achieve LEED Platinum status (Leadership in Energy and Environmental Design). Housed at the Smithsonian Environmental Research Center, the 92,000-square-foot lab consists of a newly constructed section for laboratories and offices (69,000 sq. ft.) and a renovated section for additional office space (23,000 sq. ft.). Besides leaving a lighter footprint on the Earth, more open and flexible laboratories will allow scientists to make new discoveries in biogenomics, conservation and other cutting-edge fields of environmental science.

## By the Numbers

- 37%** less CO<sub>2</sub> emitted than a non-LEED-certified lab
- 42%** more energy-efficient than a non-LEED-certified lab
- 70%** materials regionally sourced
- 96%** construction waste recycled
- 100%** water reclamation system

## What's in a Name?

Charles McC. "Mac" Mathias Jr. served as a Republican Congressman in the House and Senate from 1961 to 1987. An early environmental defender, he helped create the Chesapeake Bay Program in 1983 and advocated for legislation that would protect the Bay from pollution and overdevelopment. His Democratic colleague Mike Mansfield once called him "the conscience of the Senate."

## Scaling Up to Platinum

The U.S. Green Building Council determines which buildings make LEED certification, ranking them as Bronze, Silver, Gold or Platinum, the highest level. To reach LEED Platinum, the Mathias Lab needs 52 credits. Here is how the points are expected to break down before the USGBC evaluation in 2015:

Sustainable Sites—Target: 11 out of 14 credits

Water Efficiency—Target: 5 out of 5 credits

Energy & Atmosphere—Target: 17 out of 17 credits

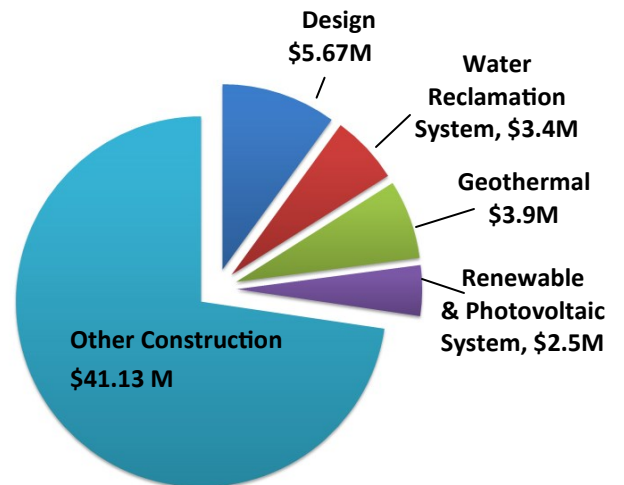
Materials & Resources—Target: 7 out of 13 credits

Indoor Environmental Quality—Target: 12 out of 15 credits

Innovation & Design Process—Target: 4 out of 4 credits

**Total Target: 56 credits**

## Project Budget: \$56.6 Million



Photos by Chuck Gallegos, Kristen Minogue and Monaca Noble of SERC (left to right).

## Key Green Features

- Passive Solar Design
- Geothermal Heating & Cooling
  - 250 wells, 430 feet deep
  - (12) 35-ton, two-stage heat pumps
  - Stable 55°F ambient heating and cooling medium
- Automated Lighting & Building Automation System
- Heat Recovery through Enthalpy Wheels
- On-site Solar Energy Production
  - 352-kilowatt array of solar panels
  - 312 kilowatts for electrical photovoltaic energy
  - 40 kilowatts for closed-loop domestic hot water production
- 100% Water Reclamation System
  - On-site wastewater treatment plant for all domestic “gray water”
  - Water returned to lab for fire protection, irrigation and water-closet supply
- Rainwater Capture (three cisterns, 16,000 gallons total)
- 4.56-acre Constructed Wetland for Stormwater Management



*Teaching and Tranquility Rain Garden. This 4.56-acre constructed wetland filters stormwater and provides habitat for native wildlife. Rainwater from three cisterns and recycled gray water from the lab provide irrigation for the plants. Directly beneath it, a geothermal well field powers heating and cooling for the building. (Photo by Monaca Noble/SERC)*

### The Six Guilds

A total of 15 laboratories conduct environmental research in the Mathias Lab, on topics ranging from mercury and nutrient pollution to genomics and global change. To encourage sharing of ideas, the new building groups labs together instead of housing each in a separate room. Each lab has its own space, but labs in the same guild are not completely separated by walls, so ecologists can freely pass between them.

**TRACE  
ELEMENT  
CHEMISTRY**

**ENVIRONMENTAL  
CHEMISTRY**

**MOLECULAR  
ECOLOGY**

**MARINE  
STUDIES**

**ESTUARINE  
STUDIES**

**TERRESTRIAL  
ECOLOGY**

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Chaney Construction, Concrete

NORESCO/Standard Solar, Solar Power

Joshua Construction, Mechanical/  
Plumbing

Singleton Construction, Electrical

Allied Well Drilling, Geothermal

A.C. Dellovade, Exterior

Northeast, Roofing

Glass & Metals, Doors & Windows