

SOME 370 solar experts met recently in Colorado Springs, Colo., to discuss the operational results of the Department of Energy's (DOE) 5-year solar demonstration program.

Under the commercial portion of the program, DOE has spent \$64 million for cost-sharing contracts with builders for 350 solar-equipped projects.

"The biggest barriers to development of solar energy are not political and economic, but institutional and communicative," said keynote speaker Fred Morse, director of DOE's Office of Solar Applications. He urged the building community to learn from mistakes in the demonstration program.

"Much of our progress has been in the education of people," Morse said, noting that DOE's 30 to 40 operational, instrumented solar systems under close analysis are performing roughly 150% better than a year ago.

Experience under the demonstration

and operational problems. Incorrect sizing of equipment for the load required is also a common problem, particularly in domestic hot water systems where oversizing is common.

#### One of DOE's finest

Roughly one-quarter to one-third of the piping was eliminated in a pre-installation redesign of the solar hot water and heating system in a commercial office building in Burlington, Mass., which has proved to be one of the best-performing projects in the DOE program. The hot water system, consisting of two liquid flat plate collectors and an 300-liter stone-lined storage tank, has provided over 85% of the hot water needs of the 1,900 square meter building since 1978. Over 170 m<sup>2</sup> of liquid flat collectors were used in the space heating system, which also has performed well since it started up in January 1979.

*Continued on page 34.*

reflected in the energy budgets in the proposed rule. Chicago office buildings, for example, are budgeted 1.3 billion kilojoules per square meter, compared with 1.9 billion kJ/m<sup>2</sup> for office buildings in nearby Milwaukee. Strom questioned whether the differences in climate between the two cities would justify these budget variations.

#### More cost/benefit criticism

Finally, Strom faulted the research design for the cost-benefit analysis of the BEPS. To be done properly, the analysis should have looked at trade-offs within sectors of the economy, he said. Instead, DOE compared costs to builders with benefits to contractors.

But the mathematician was quick to add precise and exhaustive research "takes a lot of time and money." □

Conversions are approximate  
1,300,000,000 KJ/m<sup>2</sup> = 113M BTU's per square meter  
1,900,000,000 KJ/m<sup>2</sup> = 164M BTU's per square meter

## Citibank cashes in on transportable bank

"If the branch bank module does not come up to projected volume, we can just pick up the whole building and move it to a different location," said Joseph R. DiPaolo of Citibank, New York. "These facilities are radically different from the bank's other capital investments."

DiPaolo is assistant vice president-facilities management for the

Bronx/Westchester/Mid-Hudson division, which last year put in place 3 factory-produced, 45 square meter automated banking modules at a cost of approximately \$100,000 each. Five more relocatable facilities are planned for 1980. Citibank, the second largest U.S. bank, has nearly 300 locations in New York state.

Architect Landow and Landow,

Commack, N.Y., has received awards for the module's design from the New York State Association of Architects and the American Iron and Steel Institute.

Modules are fabricated of panels of 16 gauge enameled porcelain enameled steel, bolted to a steel frame. Light gauge steel framing used for the first modules will be replaced by lightweight rolled steel sections in future production for improved control and assembly time. The structural system gives modules lateral stability.

Each module costs \$60,000 for actual fabrication and \$40,000 in ancillary costs such as electronics and site preparation. The first modules were installed within a 40 kilometer radius of the plant. Transportation and rigging services cost from \$3,500 to \$4,000.

Construction costs for a traditional branch of 110 m<sup>2</sup> to 140 m<sup>2</sup> would run from \$125,000 to \$200,000, DiPaolo said. Projected annual cost to operate the all-electric modules is about \$4,500, compared with \$6,500 to \$20,000 depending on the size of a small traditional branch and its location. □

