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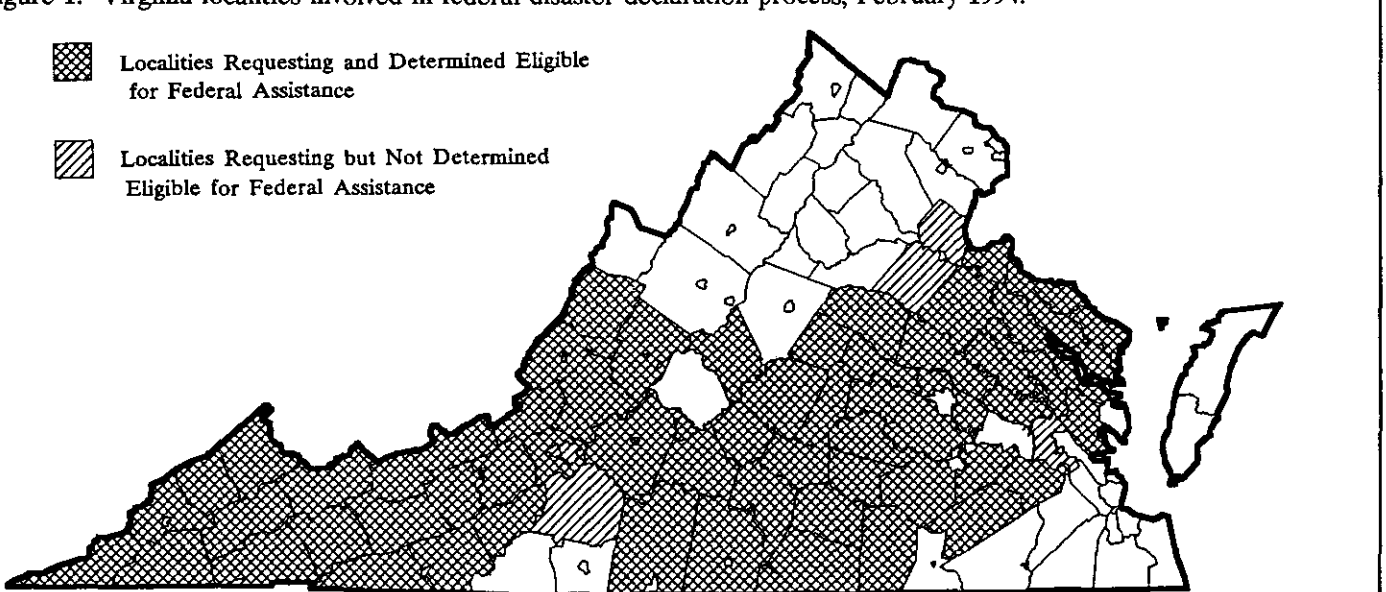
An Introduction to Disaster Economics

Alan Raflo and Mark Crawford

But I was going to say when Truth broke in
With all her matter of fact about the ice storm,...
from *Birches*, by Robert Frost.

Coming just in time for the Winter Olympics, February's winter weather won at least the bronze medal for Virginia ice storms this century. Only two ice storms this century, one in 1918 and one in 1943, were comparable, according to state disaster officials. The National Weather Service reported 2-4 inches of frozen precipitation over most of the state, with higher amounts reported in some areas. Ice-laden downed trees and power lines caused the damage in most affected locations, but in far southwest Virginia flooding resulted from heavy rain (over 6 inches was reported in Wise County February 9-12). In short, it was a disaster for individuals and for some 75 counties and cities included in Governor George Allen's February 26 request for a federal disaster declaration (Figure 1).

Figure 1. Virginia localities involved in federal disaster-declaration process, February 1994.



Cities requesting aid: Bedford, Bristol, Buena Vista, Fredericksburg, Lexington, Lynchburg, Radford, Roanoke, and Salem; those determined eligible: Bedford and Lynchburg. Sources: VA Dept. of Emergency Services, *Roanoke Times & World-News*.

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Everyone who experienced the February storm knows how it affected their locality. This article offers a statewide glimpse at February's weather and its longer-term economic effects. The February storm was, of course, not the only serious weather event in Virginia this winter--depending on one's location, the March 1994 ice storm was better, just as bad, or worse--but more information was available on February's events, so we've used those events to look at the economic costs of a disaster.

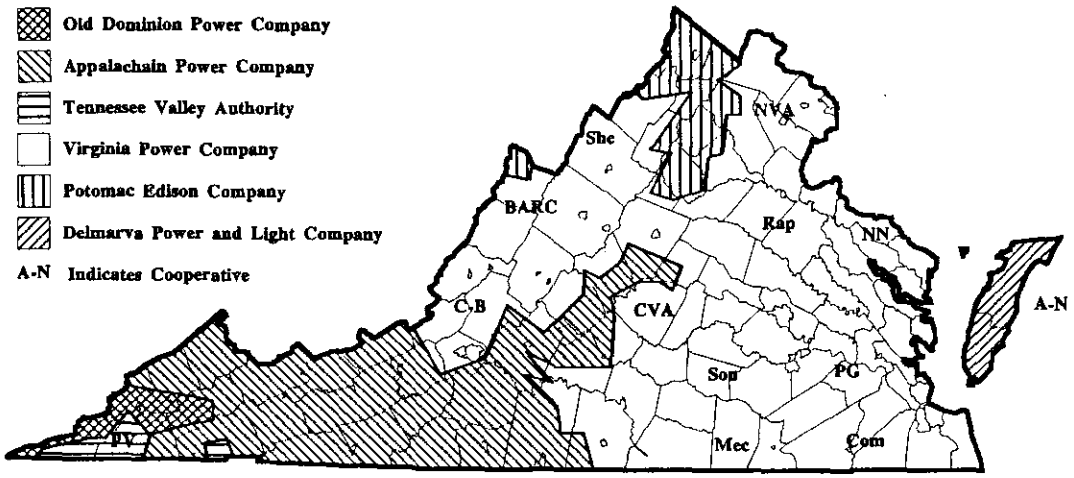
You Know What Happened To You...How About Elsewhere?

Electrical Power Outages. Reports of time without power--due to electrical equipment damaged by falling trees or limbs, by the weight of the ice itself, or by thawing limbs on their way back *up*--ranged from a few hours to many days. The effects varied from inconvenience to significant disruption to--in cases of people with special medical equipment--the potentially life-threatening. The storm affected thousands of electric customers, as shown in Figure 2 (electric utilities estimate each customer represents 2.6 people). Loss of power occurred far beyond Virginia. The *Virginian-Pilot* (Norfolk) reported that the number of customers without power on February 13 was over 50,000 in Maryland, 160,000 in Mississippi, 250,000 in Tennessee. Other reports put the number at over two million from Mississippi to New York.

"The vast geographic distribution of damage, the scope of damage, number of people affected and projected monetary loss make this storm one of the worst storms of its type to strike Virginia," said a February 18 release from the Virginia-Maryland-Delaware Association of Electric Cooperatives (VMDAEC), which represents 12 of the 13 cooperatives operating in Virginia. Initial estimates of costs were as follows (with source indicated): Virginia Power, $2-3 million (*Richmond Times-Dispatch*, February 16); APCO, $10.7 million (APCO Don Johnson, March 10); VMDAEC cooperatives, $4-5 million (*Richmond Times-Dispatch*, February 16); and Central Virginia Cooperative, $843,000 (spokesman Howard Scarboro, March 16).

Figure 2. Peak power outages during February storm (table); approximate service areas of companies and cooperatives[1] serving Virginia (map) (note: several utilities also serve customers in neighboring states).

Most-affected utilites in Virginia	VA Power	APCO	BARC Coop.	CVA Coop.	C-B Coop.	NN Coop.	PG Coop.	Rap. Coop.	Sou. Coop.
Customers without power (percent of utilities' total customers)	104,000 (6%)	140,339[2] (32%)	1,500 (15%)	9,000 (38%)	3,500 (65%)	6,000 (44%)	1,000 (13%)	25,000 (39%)	20,000 (54%)



[1]Symbols for cooperatives: A-N = Accomack-Northampton; CVA = Central Virginia; Com = Community; C-B = Craig-Botetourt; Mec = Mecklenburg; NN = Northern Neck; NVA = Northern Virginia; PV = Powell Valley; PG = Prince George; Rap = Rappahannock; She = Shenandoah; and Sou = Southside.
[2]Does not include West Virginia customers.
Sources: Electric utilities, *Richmond Times-Dispatch*; *Virginia Energy Patterns and Trends* (1991).

Horizons is published bimonthly by The Rural Economic Analysis Program (REAP), in cooperation with Virginia Cooperative Extension. REAP is administered in the Department of Agricultural and Applied Economics in Virginia Tech's College of Agriculture and Life Sciences. Please address all comments or questions to Alan Raflo, *Horizons* Editor, 216 Hutcheson Hall, Virginia Tech, Blacksburg, VA 24061-0401; telephone (703) 231-9443.

Damage to Communities. The governor's request for federal disaster assistance cited a preliminary estimate of $56 million ($31 million uninsured) in damage to public property statewide. These public cost estimates were generated from reports done by local damage assessment teams, which are coordinated by Virginia Cooperative Extension unit offices. The same teams also estimate private property damage. From these local reports, here is a sample of damages from around the state:

- structural damage to residences and businesses;
- water damage to homes, businesses, and schools after roofs were damaged or collapsed by ice;
- damage to cars struck by trees, poles, or lines;
- temporary loss of water to communities with power failure, and water-system damage;
- homes threatened by flood-damaged riverbank;
- loss of perishable food:
- damage to agricultural buildings and fences from falling limbs or trees;
- loss of timber;
- water and ice damage to small-grain crops;
- cattle down or lost;
- traffic accidents from ice or snow; and
- costs of emergency shelters, traffic control, debris removal, and street repair and maintenance.

Who's Going to Pay for All of This?

Much of the public and private property damaged in the February storm was insured. For example, the Virginia Farm Bureau, with approximately 3-4 percent of the Virginia insurance market (according to the Farm Bureau, March 1994), received over 1000 real-property loss claims, estimated at over $1.6 million. In addition, the state estimated that insurance covered $25 million of the initial $56-million estimate of public property damage. So, one answer to "who pays" will be private insurance companies; policy-holders, eventually, might also pay in higher overall rates.

For uninsured public costs (as well as uninsured costs to private, non-profit agencies, including non-profit electric cooperatives), localities may receive assistance from the Federal Emergency Management Agency (FEMA). (The possibility of this assistance is one main reason that states request a federal disaster declarations.) If localities meet the criterion that disaster costs exceed local resources to meet the costs, they can be designated as eligible for federal disaster assistance (see Figure 1 above). Localities may then apply for 75 percent of disaster-related costs of damage to public facilities and of disaster-caused activities (e.g., debris removal, emergency shelters). Applicants usually provide the remaining 25 percent.

The ultimate bill for citizens and communities, then, will consist of the following: that remaining 25 percent of uninsured public and non-profit costs in the localities eligible for disaster assistance; plus all the public, uninsued costs in localities affected by the storm but not eligible for federal assistance; plus private citizens' uninsured losses. We don't know how much money all that will cost. But we do know that taxpayers across Virginia may face higher rates from actual costs and from lost property value; that residents will face new, unplanned-for expenses; and that local economies may suffer from reduced business or purchasing power, depending on where the money to cover disaster-related costs is ultimately spent.

Finally, who will ultimately pay for the costs incurred by the electric utilities? According to a statement that VMDAEC issued after the March storm, "Affected co-ops are looking to recoup storm costs from various sources, including insurance and, if necessary, available operating margins. As non-profit entities, federal assistance should also be available to cover part of the expense. Rate increases would be considered only as a last resort...." Except for the federal assistance, these are the options for Virginia Power and APCO, as well. Rate increases would have to be approved by the State Corporation Commission and would have to be justified in the overall context of an individual utility's costs and revenues. In 1990, revenue equalled $3.2 billion for Virginia Power, $608 million for APCO, and $365 million for the 13 cooperatives (*Virginia Energy Patterns and Trends, 1991*; overall cost data not included in this source).

Conclusion

In this swirl of disaster damage and dollars, some perspective might be helpful. Consider the impact of the 1993 Midwest flood, considered the "flood of the century." In a single state, Iowa, the estimated damage by mid-July was $2.7 *billion* (and the flooding was not yet over). Our point in making this comparison is not to imply that Virginia's experience in the "ice storm of the century" was insignificant. We mean, instead, to note that nature and chance can deliver blows even more severe than the one Virginians just endured. Recognizing the worst that might happen can help set the boundaries for disaster planning and preparedness in Virginia's communities.

A disaster affects people's lives in many ways, both during the event and, in some cases, for a long time afterward. Perhaps the most widespread, single effect is neither physical nor financial, but psychological: A disaster makes people and communities think about things that they normally neglect, overlook, or take for granted. With foresight and effort, the post-disaster thinking going on in Virginia's communities now can result in those communities becoming more prepared, better informed, more cooperative, or at least more aware that "truth" may "break in" at any time.

NOTICES

*"Alternatives to the Property Tax to Fund Local Schools," April 29, 9:00 a.m.-12:30 p.m, Leesburg. This seminar will address a question currently being asked in many states: Can localities continue to pay for public education from property taxes? The seminar is sponsored by Amendment I, Inc., publishers of *Leesburg Today*, with assistance from REAP. To register or for more information, contact George Atwell, Amendment I, Inc., 112-Q South Street SE, Leesburg, VA 22075; (703) 771-8801. The registration fee is $15, payable to Amendment I, Inc.

*The Center on Rural Development (CORD) is soliciting applications from rural communities for the Strategic Planning Partnership program. The program is designed to help communities determine "where they are now, where they want to be in the future, and how to get there." Eligible applicants are rural local governments, planning district commissions, non-profits, and other local or regional community-based groups. The application deadline is April 22. For more information, contact CORD, 501 N. Second St., Richmond, VA 23219; (804) 371-7075.

*The Virginia Water Resources Conference will be held April 18-20 in Richmond. The conference is sponsored by the Virginia Water Resources Research Center and the Virginia Lakes Association. For more information, contact Elizabeth Crumbley, VWRRC, 617 N. Main Street, Blacksburg, VA 24060-3397; (703) 231-8038.

*REAP Report #18, *The Potential for Competitive Corn Production in Virginia's Coastal Plain*, by Suzanne Thornsbury *et al.*, is now available. The report evaluates potential corn yields for Coastal Plain localities, determines the Coastal Plain crop acreage that is capable of long-run competitive corn production, and discusses management practices that can help producers achieve the potential yields. For a copy, please contact Extension Distribution, 112 Landsdowne Street, Blacksburg, VA 24061-0512; (703) 231-6192. Request Publication 448-216/REAP R018.

**Wellhead Protection: A Handbook for Local Governments in Virginia* is available from DEQ Water Div., P. O. Box 11143, Richmond, VA 23230, (804) 527-5201. *Rural America: The Solid Waste Issue Hits Home* is available from TVA's Center for Rural Waste Management, OCH 2B-K, 400 West Summit Hill Drive, Knoxville, TN 37902-1499.

For more information, please contact REAP at Hutcheson Hall, Rm. 216, Virginia Tech, Blacksburg, VA 24061-0401; telephone (703) 231-9443.

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