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Resource Policy Center Thayer School of Engineering
Dartmouth College
Hanover, NH 03755

*Dynamics of
Long-Term Resource
Availability*

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of Energy under contract
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FACTORS HINDERING THE DEVELOPMENT OF
SMALL-SCALE MUNICIPAL HYDROPOWER:
A CASE STUDY OF THE BLACK RIVER PROJECT
IN SPRINGFIELD, VERMONT

Eugene Peters
Glenn Berger
Jeff Amlin
Dennis Meadows

DSD #144
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FINAL REPORT
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EXECUTIVE SUMMARY

Purpose of the Study

There are many good reasons to use New England's small-scale hydropower resources to generate electricity. But current production capacity in the three northern states is only 1,300 megawatts, just 35 percent of the 3,710 megawatts estimated in a 1977 study by the Army Corps of Engineers to be available to the states.¹ Though the benefits of properly designed projects seem substantial, many factors combine to hinder their development. The Black River project in Springfield, Vermont, exemplifies the problem. Even after the town has invested over five years and \$1 million in its effort to develop 30 megawatts of capacity, it still has not received either federal or state approval to proceed with construction.

In this report we present our case study of the Springfield effort. We have sought to identify factors that have greatly increased the cost and planning time for the project. Our goal is to identify changes that could facilitate efforts to develop small-scale hydropower at other acceptable sites. We are not single-minded proponents of hydropower: many sites that could physically generate power would clearly entail prohibitive environmental or social disruptions. But there do seem to be many potential sites in New England that warrant development. These could provide significant benefits for many at only minimal expense to the region. We wish to identify some of the factors that currently impede such development.

Many questions posed by such projects lie outside the scope of our study, and several issues raised by Springfield's initiative are still far from resolution. Nevertheless, the Springfield experience does provide the foundation for several generalizations useful to energy policymakers and to those who are contemplating the initiation of analogous projects elsewhere. This report describes the first four years of Springfield's experience and prescribes three changes that seem warranted to reduce the costs and delays in developing other dams.

Description of the Springfield Effort

On October 20, 1977, the townspeople of Springfield, Vermont, voted 2,260 to 893 in favor of a proposal to develop a municipal hydroelectric generating facility. The Springfield residents hoped, by harnessing power from the Black River, to reduce their electric utility costs, which had increased 99 percent from 1970 to 1975. The proposal authorized the renovation of five existing small dams on the river, the construction of a large dam with a storage capacity of 500 to 800 acres on the Weathersfield-Cavendish border, and the acquisition of electric power distribution and transmission facilities from the local private utility, Central Vermont Public Service Corporation (CVPS).

The October 20th vote was one important milestone along the road to municipally controlled hydroelectric power generation in Springfield (see Figure ES-1). The Black River project had been initiated more than three years earlier in the offices of Town Manager Paul McCarthy. It was first proposed publicly, in a somewhat different form, in January of 1975. In a referendum

FIGURE ES-1: PRINCIPAL EVENTS TO DATE IN THE BLACK RIVER PROJECT

held in March 1975, Springfield residents consented to the proposal by a three-to-one margin, at the same time authorizing Springfield officials to secure \$57 million in revenue bond funding for the project.

As originally proposed, the project called for the renovation of six existing small dams; the construction of three new dams, one of which--the Hawks Mountain dam--was to be 155 feet high and have a 500 to 800 acre reservoir; and the acquisition of distribution and transmission facilities. Between March, 1975, and the vote of October, 1977, political and legal pressures forced modification of the Black River project and sizeable expenditures of time, money, and energy to assure its survival.

Opposition came from two main sources. After initial voter approval of the project in March, 1975, CVPS quickly instituted litigation against the town. The motivation for CVPS's actions is understandable. CVPS currently markets the electricity in Springfield and stands to lose 4 percent of its yearly revenue if Springfield's plans are successful; moreover, the company must face the possibility that other Vermont municipalities will seek to emulate Springfield's example. For whatever reasons, CVPS has consistently attempted to stall the project's progress through lengthy and costly litigation.

Strong opposition to the project also came from the towns people of Cavendish, Vermont, where the Hawks Mountain reservoir was to be established. The construction of the reservoir would entail disruptions including the inundation of seven households and the relocation of one of the town's major access roads.

Because Cavendish lacks the financial resources of CVPS, it has not sought to block the Black River project by litigation.

Rather, through intensive lobbying efforts, the town succeeded in having the Vermont legislature rescind Springfield's rights of eminent domain for 1975 and 1976.² While this did not prove to be a direct obstacle to Springfield's efforts, the threat did cause reassessment of the original proposal. The R.W. Beck Evaluation Report of August 1976, based on an improved engineering analysis, revised the construction proposal for Hawks Mountain dam. While the project's electrical output was increased from 22.5 to 30 megawatts in this scheme, the renovation of three dams was dropped and the Hawks Mountain dam was resited so as to affect fewer homes.

In spite of a Supreme Court decision nullifying the original town referendum and the continuing opposition of private utilities, project planning has proceeded steadily since 1974. By 1979 the town of Springfield had spent nearly \$1 million on technical studies, legal services, and general project expenses.

The efforts initiated at Springfield in 1974 are still many years from completion. Preliminary hearings before the state Public Service Board on the creation of a municipal utility began in May 1978. On June 5, 1978, Springfield submitted its licensing application to the Federal Energy Regulatory Commission (FERC). These two events signaled the beginning of a new phase in the project; now many months will be required before substantive findings are available. Nevertheless, the first four years of activity do provide salient insights for potential policy

recommendations. Our study of the Springfield example has produced five general findings.

Findings

1. There is strong political and financial backing for the growth of municipal power in Springfield.

Prior to the nullification of the first town hydro referendum, the Springfield officials had begun negotiations on the issuance of revenue bonds for the acquisition of electrical distribution facilities. CVPS had predicted the offering would elicit a lukewarm response, but the Springfield officials were inundated by optimistic bond underwriters. The interest terms that were discussed were quite favorable to the project.

2. Comprehensive plans for development of Vermont's rivers would reduce the cost of dam development.

Many different individuals and organizations pursue competing goals for Vermont's network of rivers. Recreation, aesthetics, human habitation, the promotion of fisheries and wildlife refuges, flood control, electricity generation--all these uses and interests interact, and often compete, in a complex fashion. Ideally, there should be socially accepted, master plans designating which uses should be emphasized on each reach of the river basin. But there is no consensus, and most actions influencing the quality and character of a river are not subject to formal environmental impact and licensing review like that applied by FERC to new power projects. As a result, proponents of competing river uses often employ the dam licensing procedure to promote their own interests, pressuring dam developers into supporting their own particular proposals. Dam proponents are very susceptible to this pressure. FERC is reluctant to deny any interest group a role in licensing procedures, and public opposition to a dam proposal by any group threatens the developer with the prospect of litigation expenses and enormously increased construction costs through inflation of labor and material prices during licensing delay.

It seems logical that dam proponents should bear responsibility for maintaining a river's overall character much as it was before the power project was initiated. But it seems quite illogical that, for example, Springfield's power customers should personally bear the expense of constructing fish ladders that give salmon access to a river where they have not been seen for centuries. Until the state has provided guidelines on appropriate river uses or FERC procedures have been drastically altered, dam developers will face long delays in licensing, increased construction costs, and enormous administrative problems in the

course of contacting and drawing consensus from various parties dispersed geographically and committed to conflicting goals.

3. Run-of-river hydropower development is more environmentally attractive than other energy sources. These environmental externalities are not reflected in current economic policies.

If a dam is used as a run-of-river facility, it does not alter established seasonal flow patterns downstream. It also requires the inundation of far less land than dams operated by storing water for long intervals to generate short bursts of peaking power. And a run-of-river dam generates at least as much electricity over the course of a year as a facility used for peaking power. For these reasons, there should be strong support for the use of run-of-river dams.

As it stands now, the economic pressures facing a dam developer virtually force the use of dams as peaking power sources. Electricity purchase contracts, regulatory rate setting, and the managerial policies of the New England Power Pool are geared integrally to the distinction between baseload, intermediate, and peaking facilities. Run-of-river dams do not fit into any of these categories. Even most of the large computerized planning models used by the utilities to guarantee a balance of supply and demand cannot accommodate endogenously the characteristics of power dams that are constrained by seasonal fluctuations in river flow.

Traditional power producers assign two components of value to each individual production facility: capacity credit and fuel credit. If a run-of-river facility has essentially zero power output during some parts of the year, it receives no capacity credit, a factor that may account for half the price most utilities are willing to pay to a supplier of electricity. For that reason it is extremely difficult for dam owners to secure a price for their power high enough to justify construction of a run-of-river dam.

4. In regulatory procedure there is insufficient appreciation of the differences between building new dams and retrofitting existing dams with new turbines.

Because FERC regulations applied in licensing a dam depend only on its power output, the developer wishing to retrofit an established dam must submit to the same regulatory requirements as the proponent of an entirely new dam and reservoir. Since many retrofit proposals would entail minimal environmental impact, there should be some recognition made by FERC of the difference.

5. Litigation by local private utilities can be a source of serious delays and increased costs to independent developers of small-scale hydropower projects.

While examples can be found of innovative and constructive collaboration between the large utilities and the developers of small dams, Springfield has faced a series of harrasing legal challenges from the established utility, CVPS, designed mainly to defeat a fledgling challenge to that company's market. Thus far two lawsuits with five issues have been brought against Springfield by CVPS. There will almost certainly be intense litigation in the future over the price to be paid by the town for the utility's distribution facilities. Even though there is no social merit to the case and the utility expects ultimately to lose, it has strong financial incentives and the necessary resources to impose lengthy and costly delays on a dam proposal.

Another strategy being used by established utility companies is to apply for preliminary permits on sites they have no intention of using--merely to forestall their independent development by a competitor. It is important that the public utility commissions think through the issues that typically arise in the development of municipal power projects and then issue procedural guidelines which will remove most of the current conflict from the courts.

Recommendations

Small-scale hydropower is a decentralized energy resource. Its environmental impacts are highly site-specific and usually of only local importance. It seems inappropriate, therefore, that a centralized federal agency such as the FERC should oversee its development. Substantial costs and lengthy time delays are now attributable to FERC requirements, which do not provide commensurate social benefits. Reform in this area could be a very effective boost to the future growth of small-scale hydropower. In light of the history of the Black River project, we advocate:

1. After issuance of a FERC permit, a preliminary determination of the project's impacts should be made by FERC officials; if environmental impacts are solely local or limited, environmental analysis/determination should be placed in the hands of the state;

2. Short-form licensing should be used for all run-of-river hydro projects that utilize and do not significantly modify existing water impoundment areas and do not significantly alter downstream flow patterns;

3. A hydro ombudsman with power at the state level should be established to facilitate governmental inter-agency coordination and project-related information transfer: "one-stop" licensing.

INTRODUCTION

The surge of national interest in the development of small-scale hydropower facilities warrants concern over the long delays and high costs encountered by Springfield, Vermont, in the process of designing and obtaining permits for a municipal hydropower project. Since early 1974, town officials have expended nearly \$1 million on engineering, financial, and legal efforts, yet they still have not obtained final government approval for their proposal. In this report we describe the history of the Springfield effort and indicate the factors that have led to substantial delays and costs. Because the Springfield project will not be completed before mid 1982 under the best of circumstances, this report is necessarily incomplete; nonetheless, there is still much in Springfield's experience to assist other hydropower developers and to guide state and federal officials interested in expediting similar projects in other locations.

The larger investor-owned utilities have not developed small-scale hydropower sites. The industry claims that these facilities are not cost effective. Our research has indicated several other factors which may dissuade investor-owned utilities from developing small sites:

1. Hydroelectric projects are capital-intensive and hence are very sensitive to the financing terms for the capital investment to construct them. Municipal tax-exempt financing creates an advantage to towns trying to acquire capital.
2. Investor-owned utilities have adopted a policy of greater and greater economies of scale.
3. Municipals have priority in licensing and loans and grant programs.

4. Hydrodams depreciate out of a utility's rate base long before the end of their useful physical lifetime.
5. Fuel adjustment clauses isolate private utilities from fuel-associated risks; therefore they do not properly value the sustainable quality of hydropower.
6. Small, dispersed hydrodams are prey to municipal take-over.
7. Investor-owned utilities must pay taxes on their profits.

Most hydropower developments are therefore likely to come from small, independent organizations such as municipal power departments or private entrepreneurs. These organizations and individuals will have to solve a set of design and legal problems in structuring their contractual relationship to the large power companies. They must also deal with the engineering, environmental, and legal issues associated with the construction or renovation of dams.

This paper begins with an introduction to the town of Springfield and the events that have occurred there through February of 1979. A summary of the public response that has greeted the project is also included, with a consideration of its historic roots. Next, the town's efforts to satisfy federal regulatory requirements are detailed, as these form much of the focus of Springfield's hydro work performed to date. This is followed by a description of legal actions already completed and a preview of possible future litigation; the questions of eminent domain and riparian water and land rights are taken up in this section. Although much of the past litigation revolves around the issue of municipal acquisition of private electrical distribution and transmission facilities, the events provide insight into the competition of municipal and private utilities. This

conflict could be critical to the future growth of small-scale hydropower. Finally, there is a discussion of project financing. For each stage of the project, the different methods of capital formation that were considered appropriate by the Springfield officials are reviewed, along with an examination of the motivation for and the effectiveness of each mode of financing.

HISTORY OF PROJECT

Overview

Springfield is situated on the central eastern border of Vermont (see Figure 1). With a population of over 10,000 in 1970, it was Vermont's seventh largest city. The town straddles the Black River, a tributary of the Connecticut River. Although the river is currently appreciated only for its aesthetic value, it played an integral role in the development and growth of Springfield.

During the town's early years, the Black River attracted industry to Springfield. A grist mill operating on water power was constructed alongside the "Lower Falls" in 1774, and by 1885 over 261 kilowatts of run-of-river hydropower had been developed in Springfield. This local water power was instrumental in the growth of the prominent tool industry. The firm that was later to be called Parks and Woolson Machine Company came to the area in the early 19th century specifically because of the Black River's water power capabilities. Other tool companies, which grew from this earliest firm, also came to rely on the Black River for power. In addition to serving the tool industry, the river powered textile mills, sawmills, and an electric railway, which operated intermittently for fifty-nine years.

Springfield's early dams were mostly of timber crib construction; later they were replaced by concrete and masonry structures. The five dams still existing in Springfield were all erected in the late 19th and early 20th century. The city's

FIGURE 1: MAP OF BLACK RIVER AREA SHOWING FACILITIES IN REVISED HYDRO PROJECT

hydro facilities were used to capacity until 1927, when a major flood disrupted the town and damaged the hydropower plants. The following decades witnessed a decline of hydropower in Springfield. Local hydropower could not compete with the declining electricity costs and the year-round availability of electricity, and in 1967 Springfield's last operating hydrodam was retired.

In New England, the diminishing price of electricity was largely based on inexpensive oil. In 1976, for instance, almost 60 percent of the region's electricity came from burning oil, and approximately 80 percent of that oil was imported.³ The social costs of this reliance have now been revealed by the Arab oil embargo and the quadrupling of world oil prices. Between 1970 and 1975, the year when Springfield made public its plans to redevelop its hydro potential, the local electricity rates increased 99 percent.⁴ In 1974 the town manager began to investigate the possibility of revitalizing Springfield's own neglected energy resource, the Black River.

Events to Date

Springfield officially announced its intentions to operate an electric utility on January 23, 1975 (see Appendix A). The next day, the town filed an application with the Federal Energy Regulatory Commission (FERC, then the Federal Power Commission) for a preliminary permit. For over eleven months before the project was made public, town officials had been working with consulting engineers to prepare the feasibility studies needed for licensing and permit applications. The town's actions were timed to prevent intervention by the Central Vermont Public

Service Corporation (CVPS), who, had they known earlier of the project, might have filed their own preliminary permit application with the Federal Power Commission, effectively blocking Springfield's efforts to develop hydropower on the Black River.

The project announcement was also scheduled to fall just soon enough to allow for the inclusion of a utility referendum on the agenda of the March 4, 1975, town meeting. Between the announcement date and the referendum, public response was widespread and vocal. The citizens of Cavendish, Vermont, where the proposed major hydropower facility was to be sited, quickly objected to the proposal. Springfield's secrecy during the planning stages of the project, while it may have been necessary, alienated the citizens of Cavendish, who felt excluded from the preliminary decision-making process. CVPS declared that all hydropower sites then feasible for development had already been developed. CVPS officials also indicated that any marketing of Springfield hydropower would cause an increase in rates for CVPS customers elsewhere in the state. In spite of such opposition, the townspeople voted by a margin of over three to one in favor of establishing a municipal utility and they authorized the issuance of revenue bonds worth \$57 million to finance the project.

Although the citizens of Springfield were enthusiastic, CVPS and the townspeople of Cavendish continued to be openly opposed to the project. The exhortations of Cavendish residents led to an unprecedented legislative action which rescinded Springfield's rights of condemnation by eminent domain for two

consecutive years.⁵ Because the Springfield project in 1975 was years away from any foreseeable need to exercise these rights, however, the overall effect of this action on Springfield's plans was moot.

CVPS, on the other hand, launched a series of legal actions against the proposed project which effectively stalled the Springfield effort. These actions culminated on September 12, 1977 when the Vermont Supreme Court overturned the March 1975 referendum because it violated procedures laid out in the town's own charter.⁶ The Court found that the selectmen had not given sufficient public notice prior to the referendum.

The developments initiated by Springfield in 1975 had essentially two purposes:

1. To acquire distribution and transmission facilities necessary for the operation of a municipal utility, and
2. To exploit local hydropower resources to their fullest.

The original hydropower development plans involved the construction of two new dams and the refurbishment and enlargement of seven others (see Table 1). The largest dam, at Hawks Mountain, was to have an installed capacity of 8 megawatts, while the smaller dams were to receive equipment rated at 1.5 or 2.5 megawatts. As first formulated, the entire system would have provided a peaking power generating capacity of 22.5 megawatts.

In the months following the original announcement, public comment focused primarily on the Hawks Mountain dam. This facility was conceived to be the heart of the project, since the peaking power requirements would be met by means of the reservoir storage capacity it created. On the negative side, however, the

TABLE 1:
NINE SITES INCLUDED IN ORIGINAL BLACK RIVER PROJECT PROPOSAL

<u>Site</u>	Spillway Crest Elevation	<u>Mw(e)</u>	Tailwater Elevation	<u>Head Feet</u>	<u>Description of Work</u>
	<u>MSL</u>		<u>MSL</u>		
Iron Bridge Unit	330.0	2.5	290.0	40.0	Construct small over-flow dam with 100 ft. section of Bascule gate. Construct powerhouse.
Lovejoy Unit	352.5	1.5	330.0	22.5	Raise dam 8 ft. and construct powerhouse.
Comtu Falls Unit	392.5	2.5	352.5	40.0	Construct new intake at Comtu Falls, new powerhouse downstream of Shoddy Mill dam and a conduit connecting the Comtu Falls intake to the powerhouse near Shoddy Mill.
Gilman Unit	428.0	2.5	392.5	35.5	Raise existing dam 6.4 ft. and construct new intake structure, conduit, and powerhouse.
Fellows Dam	431.0	-	-	-	Lower existing dam crest 5 ft. to El 431 to reduce flood levels upstream.
Tolles Hill Unit	510.0	1.5	480.0	30.0	Raise existing dam 7 ft. and reconstruct intake and powerhouse.
Perkinsville Unit	535.0	1.5	510.0	25.0	Raise existing dam 7 ft. and construct new intake and powerhouse 150 ft. downstream of dam.
Covered Bridge Unit	620.0	2.5	580.0	40.0	Construct small over-flow dam & powerhouse.
Hawks Mountain Unit	775.0	8.0	620.0	155.0	Construct dam and powerhouse.

Source: R.W. Beck and Associates, Feasibility Study, Seattle, WA (January 1975).

impoundment would have inundated 500 to 800 acres and ten to fifteen households in the township of Cavendish. It would also have required relocation of Cavendish's major access road.

Ostensibly in response to public opposition to the land inundation, Springfield selectmen instructed their consultants to examine alternative sites for the Hawks Mountain dam. Although Cavendish residents maintained that the examination was in fact economically motivated, the selection of the dam's present site on the Cavendish-Weathersfield border did reduce its regional impact. Most notably, the estimated number of households disrupted decreased from ten or fifteen to seven.

The publication in August 1977 of a final feasibility study altered the program for development of the smaller dams.⁷ Two dam sites were eliminated (the Iron Bridge unit and the Perkinsville unit), the Fellows renovation was dropped (see Table 2), and the overall power output of the project was increased. In the final study, which forms part of the submitted exhibits for the FERC license, "standardized" turbine and generator sizes were the goal. The Hawks Mountain unit will have a capacity of 15 megawatts, while the five downstream units will each be rated at about 3 megawatts. The total system output of 30 megawatts will then operate at an average plant capacity factor of .11.

At the same time, there is a continuing attempt to optimize the system's hydropower capabilities. The consulting engineers, R.W. Beck, Inc., are presently examining the possibility of using a double turbine arrangement to raise its overall capacity factor. Under this plan two smaller turbines would be situated

TABLE 2: SITES IN REVISED BLACK RIVER PROJECT
(EXCLUDING HAWKS MOUNTAIN)

<u>Site</u>	<u>Plant Output Mw(e)</u>	<u>Head Feet</u>	<u>Description of Work</u>
Covered Bridge	3.17	34.0	Construct a new dam and powerhouse at a location about 500 ft. upstream of the Covered Bridge.
Tolles Hill	3.27	35.0	Raise the existing dam 11 ft. and construct a new intake and powerhouse.
Gilman	2.87	30.0	Construct a new dam downstream of the existing dam, reconstruct intake structure, and construct new 160-ft. conduit and powerhouse.
Comtu Falls	2.96	30.9	Raise existing dam 2.5 ft., reconstruct intake, and construct new power house.
Lovejoy-Slack	3.27	34.1	Construct a new intake on the left abutment at the existing Slack dam. A new powerhouse will be constructed on the left abutment downstream of the existing Lovejoy dam and connected with an intake at Slack by a penstock.

Source: R. W. Beck and Associates, Final Feasibility Report: Black River Hydroelectric Project, Seattle, WA (August 1977).

at each dam. During periods of low streamflow they would operate separately rather than in tandem.

Each proposed plan has the same underlying assumption: the plants must have the capability of producing power on demand (peaking capability) and, hence, there must be water storage. The Hawks Mountain dam is thus necessary because the storage capacity of the downstream dams is insignificant.

Under the revised plan, 17.3 percent of the project's output will satisfy Springfield's own demand during times of peak consumption. The remainder of the power will be sold to other utilities. In this way Springfield will take advantage of a statewide rate structure that rewards both a consumer of electricity who buys large quantities of baseload electricity as well as a supplier who sells power for peak demand.

Peaking power is more expensive to produce than baseload power and is sold at a higher price. The price is usually equal to the incremental fuel cost the purchasing utility would have paid to produce another kilowatt of electricity itself. Furthermore, a utility pays a premium for guaranteed reliability of supply. Through the use of capacity credits, the utility rewards a supplier of power who can guarantee that peaking power will be available. Thus Springfield will obtain capacity credits for its power.

Springfield will purchase 86.7 percent of its own power for baseload use from local utilities, guaranteeing a low price per kilowatt-hour. Table 3 shows the correlation between price and load factor (percent of total consumption purchased). A consumer

TABLE 3:
COSTS OF ELECTRICITY AT VARIOUS LOAD FACTORS¹

<u>Load Factor</u> <u>(percent)</u>	<u>Cost</u> <u>(cents/kilowatt-hour)</u>
30	3.29
40	2.58
50	2.15
60	1.72

1. Based on Central Vermont Public Service Corporation
wholesale rate R-3F (replaced in 1976 by rate R-5).

Source: W.E. Davis & Associates, Engineering Analysis,
Leawood, KS (February 1976).

purchasing 60 percent of his electricity from the utility pays almost half as much per kilowatt-hour as does a consumer with a 30 percent load factor. Therefore, Springfield will be producing its own expensive peaking power, as well as buying its baseload in large quantities at a low cost.

The alternative to producing peaking power with storage is run-of-river operation. Unfortunately, such operation, which is by definition intermittent and unreliable, is not deemed valuable by other purchasing utilities. The New England Power Pool's (NEPOOL) electric utility agreements recognize only peaking and baseload power. Because run-of-river operation is an unreliable way to produce either, there is little financial incentive given in utility contracts for its development.

Another anomaly inherent in the Springfield hydro project is the town's inability to use the U.S. Army Corps of Engineers flood control dam on the Black River to provide the necessary storage capacity. The North Springfield dam has a maximum capacity storage of 51,000 acre feet or roughly twice that of the proposed Hawk's Mountain reservoir. This capacity is many times the average water storage of 1,600 acre feet required for year-round peak power production at the proposed hydro dams. In the "worst case" scenario presented in the Black River feasibility study, only 6,300 acre feet of water storage would be utilized in a drought year.⁸ This is a small fraction of the Army Corps dam's capacity.

The use of this facility for hydro development was considered by the Beck engineers, but was excluded from the work plans

for two reasons. First, water storage for power production reduces the dam's available capacity for flood waters. Second, the U.S. Army Corps of Engineers is one of the many federal and state agencies required to comment on FERC licensing applications. It was felt that an attempt to include the North Springfield dam in the project proposal could have led to intervention and opposition by the Army Corps in the FERC licensing procedure. The Springfield selectmen and their engineers felt that such an attempt would have doomed the whole project. Recently, the Corps has become more amenable to the use of its facilities for hydro-power generation. In January of 1979, Springfield submitted a preliminary permit application to study the North Springfield dam with an eye toward integrating it into the overall system.

It is interesting to note that the Black River project includes the retrofitting of one dam, Tolles Hill, which is situated in the backwater of the Corps dam. In order to incorporate it "safely" into its plan, the town authorities entered into negotiations with the Army Corps and agreed to compensate them fully for any loss in overall storage capacity that might result from the use of the Tolles Hill dam. Springfield agreed to enlarge the proposed Hawks Mountain reservoir so that an unused capacity equal to the Tolles Hill storage would always be available for flood control. The storage volume in question is no more than 100 acre feet, or .2 percent of the North Springfield reservoir capacity.

Response to the Project

A wide spectrum of emotional response greeted the announce-

ment of the Black River project. At one pole were the townspeople of Springfield who resoundingly voted their approval; at the other were the inhabitants of Cavendish, who in two separate voice votes unanimously proclaimed their opposition.

In Cavendish, which will be affected by the establishment of the Hawks Mountain reservoir, Springfield's actions appeared both inappropriate and inconsiderate. The townspeople were affronted by the secrecy shown by Springfield in its initial planning, and there is no doubt that greater cooperation would have been assured had the opinions of Cavendish residents been solicited earlier. There were historical reasons behind the animosity of the Cavendish townspeople toward the Springfield project as well. For many years there has been an active big town-little town rivalry between Springfield and Cavendish, and even though other utilities have often demanded private land for the development of electrical facilities, Springfield's proposal looked like something that verged on "municipal piracy."

The focus on eminent domain as a critical issue identifies another basis for the unfavorable sentiments of Cavendish residents. In the early 1960s, the U.S. Army Corps undertook construction of the North Springfield dam. Even though the dam site is located in Springfield, most of the reservoir area is in Weathersfield, the town adjacent to Cavendish, and some of the best farms of the Black River valley were situated in the dam's flood plain. The Army Corps was neither overly diplomatic nor tactful in its approach to land acquisition. As a result, con-

siderable ill feelings remain from that dam's construction. Moreover, since Springfield is the only town on the Black River downstream of the flood control dam, many people in the area believe the dam primarily serves the town of Springfield and its local tool industries at the expense of Springfield's neighbors, even though it was built for the protection of Springfield, Massachusetts, and Hartford, Connecticut. To some, Springfield's actions of 1975 seemed to follow a familiar pattern.

Cavendish was limited in its possible courses of opposition. Due to town restoration following a flood in 1973, the town was in debt, and town leaders realized that they could not finance lengthy court action. Taking a different tack, they lobbied their state representatives, who successfully persuaded the state legislature to revoke Springfield's rights of eminent domain for two years.⁹ In effect, this action was relatively unimportant. In Springfield's project reports, all land acquisition is to be gained by purchase. Furthermore, eminent domain is by law a last resort applicable only if negotiations to acquire land through mutual agreement fail, so eminent domain could not have been invoked until years after the passage of the legislation.

In recent months there has been a noticeable softening of the stance taken by Cavendish toward the Black River project. In January, 1978, Cavendish voters, in the only secret-ballot vote concerning the project, only narrowly defeated an article that would have made impossible any town expenditures to oppose the Springfield actions. Although still not enthusiastically supportive of the Black River project, the townspeople are clearly

less than unanimously opposed to it.

CVPS, on the other hand, has consistently opposed the Black River project. During the days in 1977 preceding the October 20 referendum, CVPS placed full-page advertisements in the local newspapers and purchased radio time to attack the town's actions. Springfield was the source of approximately \$2,700,000 in revenue in 1977, or 4 percent of CVPS's yearly total income. Springfield is also a centralized service area in a state that is characterized by widely scattered settlements. Springfield customers, being clustered together and easily serviced, are subsidizing the more dispersed customers through the prevailing uniform electrical rates. As a result, the loss of retail electrical sales in Springfield could mean higher rates for the rest of CVPS customers.

There is further justification for the CVPS's actions. Although expansion of electrical demand in Vermont has been predicted by CVPS officials, it is by no means guaranteed.¹⁰ CVPS has invested in the Seabrook nuclear power plant and could be faced with capacity surplus, should the Springfield project succeed. Finally, it is possible that Springfield will set a precedent for future municipal takeovers. CVPS currently operates eighteen small hydro dams throughout Vermont with outputs from 250 kilowatts to 6 megawatts.¹¹ Should Springfield succeed in its effort to establish a municipal electrical utility based on hydropower, other municipalities might follow its example. This possibility gives CVPS a strong incentive to intervene.

The response of the townspeople of Springfield to the Black River project also merits analysis. Always enthusiastic in their endorsement of their town's plan to utilize their own neglected energy resource and to contribute in the face of the energy crisis, they point enviously to other municipal utilities and co-ops in Vermont. Over 20 percent of the power marketed in Vermont during 1976 was sold by consumer-owned municipal utilities and co-ops. This electricity was available, on the average, 15 percent cheaper than electricity purchased from CVPS, and the five public utilities that utilized their own hydropower resources had electricity rates averaging 31 percent less than CVPS's.¹² These figures contain much of the reason for Springfield's enthusiasm.

FEDERAL REGULATION: THE FERC LICENSE

A federal license is required for most hydroelectric projects. The FERC has jurisdiction if the dam is on a navigable waterway¹³ or if the hydro project will affect interstate commerce.¹⁴ The statutes have been interpreted very broadly, so that all but very small dams are included. Even if in a rare case the developer decides that he is not under federal jurisdiction, he must still file with the FERC a declaration of intent to construct.¹⁵

The FERC license allows a developer to build and operate a hydroelectric facility for a period of up to fifty years. A FERC preliminary permit, which is optional for all major projects (capacity greater than 2,000 horsepower, or roughly 1.4 megawatts), prohibits others from developing the site and gives the developer priority in licensing.¹⁶ A preliminary permit has a duration of three years and allows the developer to secure the data necessary to complete a license application.¹⁷

To date, extensive amounts of time and money have been absorbed by the Black River project. By far the greatest use of these resources has been in the attempt to fulfill federal regulatory requirements.

Preliminary Permit Application

A preliminary permit application provides a general description of a proposed hydroelectric facility. A statement of ownership of land and water rights, an estimate of the cost of studies and construction, a general map of the proposed project,

and a description of the market for the power are necessary. The applicant must also furnish background information concerning the legal and financial status of the developing agency.¹⁸

R.W. Beck and Associates began working on Springfield's permit application on December 17, 1974. Beck was not under contract to Springfield, but took the risk that the town would later pay for the study. On January 23, Springfield signed a contract with Beck. The permit application was completed at a cost of \$5,045.63 and filed with the FERC (then the Federal Power Commission) on January 24, 1975.

If there are no conflicting applications, the issuance of a preliminary permit by the FERC is assured. Any bona fide application is granted. However, if there are two or more mutually exclusive applications, then preference is given to the applicant whose plans are "best adapted to develop, conserve, and utilize in the public interest the water resources of the region."¹⁹ Municipal and other government developers are given preference if two applications are judged to be "equally well adapted."²⁰ Because it is up to the FERC staff to determine what scheme is best or equally well adapted, there is no assurance of preference. Springfield selectmen realized this and concluded that the permit application submitted first would have the advantage. Thus the project was not publicly announced until January 23, 1975, when the permit application was ready for filing.

Local officials in Springfield have no doubts that CVPS would have filed a permit application had they known of the town's intentions. Although CVPS has contended that the Springfield site was both too expensive and too small for development,

they have recently begun to submit permit applications for other small hydro sites in the area.²¹ If CVPS had acquired the preliminary permit, they would have controlled development for three years.

On February 14, 1975, FERC (then FPC) asked for copies of an initial project appraisal report prepared by R.W. Beck in August of 1974, which had been referenced in the permit application. On March 12, having decided that the application was a sound document, FERC requested fifty-five additional copies of the application and the appraisal report. Public notice of the application for permit was given by FERC on April 9, and intervenors, protestors, and government agencies were given sixty days to respond.

Five groups filed to intervene within the sixty-day period. Most of these petitions raised questions that were deemed inappropriate to the preliminary permit procedure, and the petitioners were advised to defer their objections to a later date when public hearings would be held as part of the actual FERC licensing procedure.²²

The CVPS filed to intervene on May 2, 1975, arguing that the proposed Hawks Mountain dam and reservoir would flood their own hydroelectric facility at Cavendish during certain periods of the year. The selectmen of Cavendish (May 29) and the Concerned Citizens of Cavendish (June 4), concerned with possible disruptions of their town from the proposed reservoir, also sought to intervene. Finally, two state organizations, the Vermont Public Service Board (May 27) and the state Attorney General (June 9),

requested to intervene on behalf of the larger state community that might be affected by FERC's decision.²³

As a result of the interagency circulation of Springfield's permit application, FERC received replies from three Vermont state agencies. Vermont's Agency of Environmental Conservation offered to help Springfield with environmental issues. The agency also asked to be informed of the project's progress. Vermont's Agency of Development and Community Affairs was concerned about the project's effect on any properties eligible for inclusion in the National Registry of Historic Places. The agency also wished to ensure project compliance with the National Historic Preservation Act. The Vermont Department of Highways noted that Route 131 would need to be relocated and any new road would have to conform with the latest highway construction standards.²⁴

Three federal agencies also responded. A letter dated June 11 from the U.S. Department of Agriculture's Forest Service reflected the need to study the effects of flooding farmland in the area. The Forest Service noted that no National Forest lands would be affected by the project. The Department of Interior related several concerns in a June 4 memorandum. These concerns resulted in the amendment of Articles 7 and 10 in the preliminary permit. Finally, the Army Corps of Engineers reported to FERC on July 10, 1975. The Corps stated that the effects of the proposed actions on its North Springfield flood control dam would include streamflow regulation, reservoir storage, and environmental factors. The Corps felt that the

project would change the navigable status of the river and would affect recreational boating. The Corps asked that Springfield directly coordinate its study with their agency. This request resulted in Article 11 of the preliminary permit.²⁵

FERC issued Springfield its preliminary permit on January 12, 1976, almost one year after the original date of submission.²⁶ In granting the permit, the FERC attached a series of amendments upon whose fulfillment and acceptance the issuance of the permit depended.²⁷ These included:

- Art. 7 - Required Springfield to preserve the environmental and cultural integrity of the area while studies were conducted, and to explore alternatives that would minimize impact.
- Art. 8,9 - Instructed Springfield to designate a project liaison officer and to submit progress reports every three months.
- Art. 10 - Demanded the development of a study in conjunction with the Fish and Wildlife Service of the U.S. Department of Interior and Vermont Agency of Environmental Conservation to determine the project's impact on fish and wildlife (later incorporated in Exhibit S of the license application).
- Art. 11 - Demanded the coordination of Springfield's work with the U.S. Army Corps of Engineers.

These amendments demonstrate the cross-agency governmental concerns involved in a hydro project. The duties of the liaison officer designated by Article 9 included keeping all interested parties informed. As demonstrated by Table 4, a list of interested parties, this is no small task, and it is unfortunate that such a burden as interagency coordination should fall solely on the developer. Usually this coordination requires a familiarity with the many various agencies and public relations skills that are not necessarily characteristic of an applicant. In view of

TABLE 4: AGENCIES INTERESTED IN THE BLACK RIVER PROJECT

Federal

Federal Energy Regulatory Commission
 Department of the Army, Corps of Engineers, New England Division
 Department of Interior, Fish and Wildlife Service
 Department of Interior, Bureau of Outdoor Recreation
 Department of Interior, National Park Service
 Department of Interior, Office of Archaeology and Historic
 Preservation
 Department of Interior, Geological Survey, Water Resources
 Division
 National Advisory Council on Historic Preservation
 Department of Agriculture, U.S. Forest Service, Northeast Area
 Department of Agriculture, Soil Conservation Service

Vermont

Agency of Environmental Conservation
 Agency of Development and Community Affairs, Division of
 Historical Sites
 State Planning Office
 Scenery Preservation Council
 Department of Health
 Department of Highways
 Public Service Board
 Natural Resources Conservation Council
 Department of Forests, Parks, and Recreation
 Fish and Game Department

Local

Southern Windsor County Regional Planning and Development
 Commission
 Springfield Planning Commission
 East Central Vermont Resource Conservation and Development
 Project
 Conservation Society of Southern Vermont
 Connecticut River Basins Program
 University of Vermont Extension Service
 Vermont Institute of Natural Science
 Town of Springfield Parks and Recreation

*Compiled in part by Dan Parker, town liaison officer,
 Springfield, VT (1978).*

the wide range of interested parties, a more effective means of information transfer is in order. If the growth of interest in small-scale hydropower continues, it would be appropriate for the government itself to take on the responsibility of assembling and coordinating the requests of the various agencies. Either an existing or a newly designated group could be assigned this task. While extremely time-consuming and costly for an outside developer, interagency coordination and information transfer could become routine in the hands of an able and experienced government administrator.

The FERC License

Springfield's application for an FERC license was submitted on June 5, 1978, nearly two and one-half years after the town received its preliminary permit. Probably the most time consuming aspect of preparing the license application was the need for proper notification of the different agencies involved. Whenever multiple agencies were required to assist with or comment on the development of a licensing exhibit, progress was stalled.

There were also delays from other sources. It was not until May 1, 1976, four months after the permit was issued, that Beck sent Springfield a schedule of work for preparation of the license application. After this initial loss of four months, the actual work order to begin the studies was awarded to Beck in August of 1976, three months after the presentation of project estimates. A third delay occurred in 1978, when Springfield held up the application in order to get input from Cavendish.

Preparation of the FERC application was no small task. In final form it was a thick two volumes which had cost Springfield \$203,000 by the third quarter of 1976.²⁸ The preliminary draft was given to Springfield in the first week of January, 1977. Although the final cost of the application is not yet available, an estimate of \$300,000 would seem reasonable. The exhibits required in the license application can be separated into two categories: the standard exhibits (A-O,U) which describe the engineering and legal aspects of the project, and the auxiliary exhibits (R,S,V,W) which describe anticipated environmental impacts. The auxiliary exhibits accounted for nearly half of the estimated time and money allocated by Beck for application preparation, for they required the most interagency contact due to conditions imposed by the preliminary permit.

Exhibit R, the recreational facilities plan, is an analysis and plan for the development of recreational areas surrounding the project. This plan contains detailed specifications for the proposed recreational facilities and construction cost estimates. The document also sets forth the region's recreational needs and the goals of the planned parks. This exhibit required cooperation from many government agencies. At one meeting on November 16, 1976, for example, the following parties were represented:

- Vermont Fish and Game Department
- Vermont Department of Forests, Parks, and Recreation
- U.S. Bureau of Outdoor Recreation
- U.S. Fish and Wildlife Service
- New England River Basins Commission
- Southern Windsor County Regional Planning and Development Commission

Town of Springfield Parks and Recreation
Springfield Planning Commission
Jason M. Cortell & Associates
Black River Tribune
R.W. Beck and Associates

Exhibits S and V also required coordination with numerous other agencies. Exhibit S is an assessment of the impact of the project on fish and wildlife, and as requested in Article 10 of the preliminary permit, much of the analysis was done by other agencies in Vermont. To complete Exhibit V--an analysis of the natural, historic, and scenic areas affected by the proposed development--thirteen agencies had to be consulted.

Exhibit W is the environmental report. This exhibit is a summary of all the environmental impacts resulting from construction of the proposed facility. Exhibits H, R, S, and V are included in Exhibit W. Exhibit W includes a list of the proposed facilities, a description of the proposed operations, a description of the existing environment, a statement of environmental impacts and measures to avoid impacts, a list of unavoidable impacts, a statement on the relationship between local short-term uses and the area's long-term productivity, and a list of alternative methods of producing power. Should a formal environmental impact statement be deemed necessary, it is intended that the bulk of the information required will already be available in this exhibit.

Obviously, the inclusion of all pertinent information in the FERC application is no easy task. In past FERC actions, a substantial delay of sometimes six or more months has been required

for preparing a satisfactory document. The Springfield officials showed much foresight by submitting a draft application prior to presenting the finished application to FERC and attending a conference on December 12, 1977, with FERC staff members. At this meeting, the staff offered detailed comments and criticisms of the application draft which proved very helpful to the Springfield planners and were considered throughout preparation of the final document. This action avoided possible months of complicated correspondence and reduced the necessity of additional studies.

FERC Licensing Review

The FERC review procedure is intended to resolve overlapping and conflicting concerns of various governmental agencies. It is illustrated in Appendix B and includes the following steps:

1. The FERC staff determines if the application is acceptable. There are no specific standards available, so it is impossible to submit a "correct" application on the first attempt. When the application is acceptable, the staff obtains additional copies (between seventy-five and one hundred in the case of Springfield).
2. Copies of the application are sent to appropriate agencies for comment. The principal agencies generally involved are the U.S. Department of Interior, U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the Forest Service of the U.S. Department of Agriculture.
3. These agencies and other interested parties send their comments to FERC. Deadlines are set for submission of these comments. Often the deadlines are not observed and FERC is hesitant to proceed without a reply from the agencies. The applicant is given an opportunity to respond to these comments.
4. After receiving these comments, the staff determines if an environmental impact statement (EIS) is necessary. If an EIS is necessary, a draft is prepared. If the staff decides an EIS is not necessary, then it prepares a "negative determination" and states explicitly why an EIS is not needed. The

staff then sends the EIS or the negative determination statement out to interested parties including federal, state, and local agencies for comments.

5. After comments have been received, a final EIS or negative determination is prepared. This statement can be challenged in court. If litigation is successful, a new EIS is required.
6. While the application is being circulated, FERC staff performs an analysis of the project. They consider economic feasibility, including the market for power, financial ability of the applicant, conservation of energy, safety, environmental impacts, proposed project operation, and an assessment of the adaptability of the project to comprehensive development of the river basin. The staff also reviews other agencies' comments and prepares special license conditions.
7. A public hearing may be requested at FERC's discretion. This is to allow intervenors to have direct input in the licensing process.
8. If there are any irreconcilable conflicts, it will be necessary for a federal administrative judge to issue a ruling.

It will take a minimum of twelve to eighteen months for Springfield's license to be issued by FERC. A more conservative or realistic estimate would be three or more years. As this delay lengthens, real costs are added to the project. Most notably, inflation steadily increases the total amount of project financing required. With 7 percent inflation, each month's delay adds \$332,500 to the cost of the project. The three-year review period will increase costs by more than \$3 million. This extra expense will have to be recouped in later project revenue. Therefore, each month spent in regulatory procedure implies a higher electric bill for the consumer.

The FERC sent Springfield a deficiency letter in August 1978 indicating that exhibits K, W, V, and W were not sufficient. The town resubmitted in December 1978. On February 12, 1979, FERC accepted the license application.

CREATION OF A MUNICIPAL UTILITY

The statutory mechanisms for the establishment of a municipal utility under Vermont law have been in effect since 1961; however, Springfield is the first municipality to use the statutory procedure in an effort to establish its own utility system.²⁹

The first formal step in creating a municipal utility in Vermont is the submission of the plans for the creation of the utility by the town selectmen to the voters for approval.³⁰ The voters in the town of Springfield approved the creation and acquisition of a town utility on March 4, 1975. As a second step in the formation of the utility, the Springfield Board of Selectmen on March 26, 1975, authorized the town attorney, John Parker, to send a letter of notification to CVPS informing them of the town vote and formally notifying the utility of the town's intent to acquire all existing facilities within the municipality.³¹ The letter was received by James Griffin, President of CVPS, on March 29, 1978.

Vermont law requires an existing utility to respond to a notification of intent to acquire facilities within ninety days after its receipt.³² Instead of formally accepting or rejecting the town's offer, CVPS petitioned the Vermont Public Service Board (PSB) for a "declaratory judgement" on the validity of the procedure used by the town in notifying CVPS of its intent to acquire the corporation's facilities. CVPS amended the petition to include a complaint about the sufficiency of the public notice given before the town meeting of March 4, 1975. Until the

PSB returned a judgement, the ninety-day period in which CVPS had to respond was suspended.

CVPS based its principal legal arguments on a technical violation of Vermont's "right to know" law.³³ (Vermont law requires that all formal actions of the town selectmen be made in open session.) The corporation argued that a formal action was taken when the Board of Selectmen authorized the town attorney to notify the utility of the town's intent to acquire distribution facilities. The action, CVPS asserted, was taken at a closed executive session and should therefore be held null and void.

CVPS also contended that notice for the town meeting of March 4 was deficient. Section 7 of Springfield's town charter requires the posting of notice "in at least five public places, including the library and a newspaper of general circulation in the town at least thirty days prior" to a town meeting. CVPS argued that the town merely placed a notice in the office of a newspaper of general circulation, but not in the newspaper itself. Springfield maintained that the charter only required "posting," which does not include putting the notice in the paper. Because the notice was placed in the office of the newspaper thirty days prior to the meeting, Springfield argued, the authorization by the voters was valid.

On September 14, 1976, the PSB made a formal finding that the town of Springfield did not violate the "right to know" law. The PSB ordered a further hearing for September 28, 1976, in order to take evidence on the notice given prior to the town meeting. The PSB found on September 28, 1976, that the town of Springfield was

in compliance with the notice requirement of Section 7 of the town charter.

On October 7, 1976, CVPS filed an appeal with the Supreme Court of Vermont. The Supreme Court on September 12, 1977, reversed the PSB decision.³⁴ The Supreme Court, in looking to the Springfield town charter for guidance and relying on Vermont case law, found that Springfield had violated the notice or "warning" provisions of the charter, and furthermore, it found that Springfield's procedure with respect to notifying CVPS was a formal action that could not be considered binding unless taken or made at an open meeting. As Springfield's selectmen had taken action during an executive session, such formal action constituted a violation of Vermont's "right to know" law. In effect, the vote at Springfield's March town meeting was invalidated.

In response to the Supreme Court decision, Springfield convened a special town meeting on October 20, 1977, and the voters, by more than a three-to-one margin, reaffirmed their intention to establish a municipal utility. Two and one-half years had passed since Springfield's first attempt to get voter authorization to create the utility system. Not only had CVPS stalled the procedure, but it had also increased the costs to the town in attorney's fees.

The October 20 vote authorizing the town to create a utility raised a major legal issue, which has not yet been litigated. Under Vermont law a public utility must obtain a certificate of public good from the PSB before it begins to generate or sell

electricity. The town claims that the October 20 vote, by itself, is enough to create a municipal utility without a formal hearing before the PSB, and without a "certificate of public good." It argues that the town referendum serves the same function as the "certificate of public good," the voters having found the establishment of a utility in the town to be for the public good. Since the PSB represents the public interest at a "certificate of public good" hearing, it is not necessary according to Springfield's reasoning to duplicate the process once the public has authorized the creation of the facility at town meeting.

CVPS contends that a town meeting is local in nature and does not represent the interests of the whole region that must be considered. The utility asserts that the PSB is more capable of approaching the issue of public good from a regional perspective, and therefore that the certification of a municipal utility should be done by the PSB.

The town of Springfield is proceeding as if the town vote has authorized, and created, a municipal utility under Vermont law, but this issue is sure to be litigated at some time in the future.

Acquisition of CVPS Facilities

The town of Springfield sent notification to CVPS of its intent to acquire the corporation's distribution facilities within the town as required under Vermont law.³⁵ On January 27, 1978, CVPS sent a letter to the town notifying the Board of Selectmen of the corporation's rejection of the town's offer.³⁶

John Parker, the town attorney of Springfield, then petitioned the PSB to determine a reasonable price for the facilities.³⁷ On March 17, 1978, the attorney for CVPS met with John Parker and the PSB of Vermont in order to create a schedule for pretrial discovery.

Springfield submitted its demands for discovery on April 3, 1978. CVPS had thirty days to respond and did so on May 3, 1978. Springfield had until July 5, 1978, to file its prefiled testimony with the PSB and did so on July 3. In early August, CVPS met the thirty-day statutory requirement by filing its discovery demands with the PSB. On September 1, 1978, Springfield responded to CVPS discovery demands. CVPS had seventy-five days to submit its prefiled testimony to the PSB.³⁸ CVPS did not submit its testimony until February 9, 1979. A hearing before the PSB has been scheduled for March 1979 to set a timetable for acquisition hearings.

The entire schedule for pretrial discovery can be suspended whenever it becomes necessary for any party to file a motion to compel the other side to produce documents, or whenever a party begins litigation arising out of the procedure. CVPS has filed two such motions to compel Springfield to disclose information. The first motion demands that Springfield file a rate profile. The second motion requires Springfield to file an alternate siting plan for its facilities. Springfield has moved to dismiss the motions. The PSB has not acted on the motions.

At the first condemnation hearing to acquire the facilities of CVPS on May 23, 1978, a dispute arose over the necessity that the town of Springfield define a "service area." CVPS contended

that under Vermont law a utility must define its "service area"; since Springfield had not defined its service area, CVPS moved to dismiss the hearings. Springfield argued that a service area could be easily defined, but that to do so is not required by Vermont law. On June 7, 1978, the PSB denied CVPS's motion to dismiss. It found that Springfield would have to designate a service area, but that failure to do so at the time was not sufficient to dismiss the hearings. The PSB allowed Springfield to define the area as hearings progressed.

Once all disputes are litigated and discovery is completed, the PSB will hold formal hearings to determine the price to be paid by Springfield for CVPS's facilities within the town. Any decision of the PSB may be appealed to the Supreme Court of Vermont as a matter of right.³⁹

Acquisition of Land and Water Rights - Eminent Domain

The next step in the formation of a utility is for the town of Springfield to acquire the land and facilities for the construction of the Hawks Mountain dam. The acquisition of land may include the condemnation of several houses and buildings in the neighboring town of Cavendish. The procedural mechanisms under Vermont law for acquisition of the land and buildings are not entirely clear. The town of Springfield may acquire the land and buildings in the town of Cavendish using its power of eminent domain.⁴⁰ The town, once it acquires its federal license, is entitled to exercise the power of eminent domain under federal law. This federal right to proceed through eminent domain preempts the state's power to restrict such rights. In all cir-

cumstances, however, the power to proceed by eminent domain is a last resort which may be invoked only after failure of reasonable efforts to negotiate the transfer of land and water rights. The town of Springfield is presently in the process of negotiating with landowners in the towns of Cavendish and Weathersfield to acquire the needed properties by mutual agreement.

Finally, the town of Springfield will have to acquire water rights in the Black River. The state of Vermont has closely followed the common law "reasonable use test" in relation to the rights of owners of a stream and the rights of riparian owners. Riparian owners have correlative rights and must use their rights so they do not deprive others of the equal enjoyment of the same rights. The rights of the upper and lower riparian proprietors are reciprocal--each owes the others the duty of so exercising his rights and so limiting his own appropriation of water as to keep within the bounds of reasonable use.⁴¹

There is no black letter law on the rights of a municipality to acquire water rights. It seems clear that the law for acquisition of water rights closely parallels the law as it applies to eminent domain. Since the water will be used by the public, the municipality may acquire the rights to the water if the riparian owners are compensated for any losses they may incur. The town of Springfield will have to try to negotiate a mutual agreement before it exercises its power of eminent domain. If it must exercise the power of eminent domain, the PSB will have to authorize any acquisition.⁴² The town contemplates gaining easements over the area to be flooded in order to avoid

acquisition in fee, which would be more costly. The town has begun to negotiate with affected landowners to work out an agreement beneficial to both sides.

PROJECT FINANCING

Hydroelectric power development is capital intensive. In the past, government agencies such as the Tennessee Valley Authority and the Army Corps of Engineers were principally responsible for hydro construction. More recently, municipalities have been regarded as prime candidates for sponsoring new or retrofit hydro projects because they are able to secure tax-exempt financing. In spite of popular acclaim for this "municipal advantage," however, there are often political and financial constraints that affect the accessibility of capital.

The following section is a discussion of Springfield's attempts to obtain project financing. In each phase of any similar project, the selection of appropriate financial resources is restricted by outside constraints that are not always apparent at the time. In Springfield, there were unexpected obstacles that resulted in wasted time and effort. Overall, however, the acquisition of necessary capital has proceeded smoothly and has not proved a significant impediment to the progress of the Black River project.

Preliminary Studies - \$40,000

Prior to any in-depth planning or engineering studies, a hydropower developer must secure sufficient information to make a preliminary assessment of project feasibility. This is needed to obtain the FERC preliminary permit required for projects greater than 2,000 horsepower.⁴³ At Springfield almost \$40,000 was gambled on preliminary studies without any assurance of positive results. If the town leaders had not been absolutely confident

that the proposal could succeed, it is doubtful that the project would now be underway.

Springfield's budgeting procedures are explicitly detailed in its town charter.⁴⁴ The yearly budget is presented to the townspeople at a March town meeting, where it is either wholly approved or rejected. Since unforeseen developments can always occur, the town manager receives at that time a contingency allotment of significant size. At the end of the year ample justification must be made to the town by the selectmen for any expenditures disbursed from this fund. In the early stages of the Black River project the town manager used this authorized budgetary freedom to its fullest extent. The town charter enabled Paul McCarthy to operate with autonomy and avoid violation of the state's strict "right to know" statutes while maintaining project secrecy. If any funding authorizations had been required from the selectmen, a legislative session, which is public and must be publicized in advance, would have been mandated by state law, thereby ending any attempts to enforce the strict secrecy that surrounded the project. There were two key elements in the successful completion of the initial phase of the Springfield project: a suitably flexible town charter and a competent, trustworthy town manager who was willing to work autonomously.

Planning, Engineering, and Legal Expenses - To date: \$723,000;
Projected: \$2 Million

Since the Black River project was judged to be technically and economically feasible, there has been a continuous stream of

project-related bills from engineers, lawyers, and other consultants (see Appendix C). The total cost of these services can rapidly mount to a point where it exceeds the municipality's short-term borrowing capabilities. When this becomes the case, a more satisfactory method of financing must be found.

The original articles approved by the townspeople of Springfield in 1975 authorized the town selectmen to secure revenue bonds (see Appendix D on municipal bonds) for the purpose of establishing an electric utility, and the selectmen proceeded to secure an underwriter and initiate bond negotiations. When the 1975 vote was overruled, however, the mandate for revenue bond procurement was likewise lost, a setback that increased the selectmen's concern about the political vulnerability of various financing methods.

When the articles for the rescheduled referendum were prepared, the selectmen added an additional request for the issuance of \$2 million worth of general obligation bonds to cover accrued and projected construction expenses. This method of financing had two advantages: it was difficult to block by litigation, and it took advantage of the town's AA credit rating. The day after the public authorization via the October 1977 referendum, the town of Springfield successfully marketed the general obligation bonds at an interest rate of 5 percent. This is significantly below short-term borrowing costs, and the bond issue has proved an effective means of meeting the substantial expenses incurred during the early stages of the project.

Acquisition, Construction, and Contingency Financing - Projected:
\$57.9 million

For the greatest part of the project capital, Springfield will rely on funds available through the issuance of municipal revenue bonds (see Appendix B on municipal bonds). The Springfield selectmen plan to obtain two separate issues of revenue bonding, the first to cover all costs of the acquisition of transmission and distribution facilities, and the second to enable construction and renovation of the hydro sites. The town's ability to secure adequate revenue bond financing will depend on investors' perceptions of project risk.

The first of the bond issues, estimated at \$3.7 million, will be negotiated after the PSB rules on the municipal takeover of CVPS facilities. Among other things, the PSB will "fix the price to be paid" for the equipment acquired by Springfield.⁴⁵ Once this figure is determined, the economics of Springfield's action should be clearer, for while there are risks associated with municipal power, revenues from marketing that power are reasonably assured because of the relative inelasticity of consumer demand.

Although the sale of the first bonds is still some time away, the town managers came close to a negotiated bond offering in August of 1977. While premature, their attempt provided insight into the viability of a similar offering in the future. CVPS has maintained throughout that the market for these bonds would be

miniscule and would prove costly to the borrowers. The company cited the testimony of an investment banker from the First Boston Corporation who asserted that the industrial makeup of the town would seriously reduce enthusiasm for any bonds issued by Springfield to finance establishment of a municipal utility. Events showed this to be inaccurate, however. Rather than encountering difficulties, the Springfield selectmen were beset by eager bond underwriters. Approximately fifteen firms approached the town with hopes of becoming its lead underwriters. Interviews were held with seven companies before the selectmen settled on the New York investment banking firm of Smith, Barney, Harris, and Upham. Both the strength of this response by the underwriting firms and their comments to the Springfield selectmen testify to the existence of significant investor demand for bonds used to establish a municipal utility.

On the other hand, the unmistakable enthusiasm for the town's first issue does not assure a similar appreciation for the second issue, which will finance the hydropower expansion. There is very little precedent for revenue bond financing of small-scale hydro projects. Furthermore, until Springfield has gained some experience as an electrical utility, it is difficult to estimate how a very large revenue bond issue would be received. Should Springfield prove adept in the management of its proposed utility, it seems reasonable to assume that investor reservations about the second issue will decrease and financing costs be reduced.

In any event, potential investors will demand that certain conditions be met. Most important, the Springfield selectmen will have to obtain an approved FERC license for the project. As this basic requirement will not be satisfied for at least several years, it is extremely difficult to predict the market's response to the bonds. Also, because the lion's share of the power will be sold to customers outside Springfield, strong commitments to purchase the power through formal purchase power agreements will be necessary. These agreements are contracts between utilities whereby power capacity is bought and sold. Ideally, a power marketing utility such as Springfield intends to become can gain long-term income assurances through these contracts, insuring adequate revenues to cover all debt, operation, and maintenance costs or substantial parts thereof. Through purchase power agreements, investor fears are mitigated and the assurance of a successful bond offering is increased.

Springfield has begun to address the problem of marketing its power by joining Vermont Public Power Supply. This is an organization of thirteen municipal electric utilities and electric cooperatives, and Springfield expects to sell a large percentage of its power surplus to other members. Preliminary inquiries from several municipal utilities and cooperatives in Vermont indicate that there is adequate demand for the power and that future power contracts are probable.⁴⁶ CVPS itself has manifested some interest in purchasing peaking capacity from Springfield.

It is very important to realize that both revenue bond issues will occur through negotiated sale and not at public competitive bidding. When the final bond offering terms are settled, the town managers will be in a position to proceed. They could also decide to retract the offer, however. There is a certain flexibility, and actions preceding the actual bond sale should not be regarded as irrevocable.

Project Economics

At the core of the formal opposition by CVPS to the Springfield project is a document entitled "Rebuttal Memorandum" and subtitled "There's No Such Thing as a Free Lunch." This report attacks the assumptions underlying R.W. Beck and Associates' affirmation of the economic feasibility of municipal power. Beck, in its report, concluded that municipal power would bring Springfield savings on electricity charges of approximately 15 percent. The "Rebuttal Memorandum," on the other hand, determined that municipally produced electricity would cost town residents between 18 and 97 percent more than they would otherwise pay CVPS.

Springfield officials were understandably disconcerted by this discrepancy. In reaction, they commissioned two independent reviews of the economic analysis, selecting P.F. Jurgs and Company of Vermont and W.E. Davis and Associates of Kansas to carry out the task. Each of these investigators concluded that the operation of a municipal electric utility was in the best interests of the community. Savings of 25 and 29.2 percent, respectively, were predicted.

Nevertheless, a final determination of economic feasibility is somewhat elusive and hazardous for two reasons. First, many key cost estimates are still in dispute. The cost of distribution and transmission equipment acquisition from CVPS has been estimated at \$3.7 million by R.W. Beck, while CVPS put it at \$15 million. The taxable value of the assets, on the other hand, was maintained by CVPS in April of 1975 to be only \$1,904,928.⁴⁷ The final determination of the "fair" value of the equipment will fall on the Vermont PSB. When this figure is available, an accurate assessment of the project's economic merits will be both more possible and more meaningful.

The second difficulty lies in the fact that project economics will, to a great extent, be dictated by the market forces prevalent at the time of revenue bond issuance. In Beck's cost estimates, a bond with an interest rate of 7.8 percent and a debt coverage ratio of 1.4 is assumed. In the CVPS "Rebuttal Memorandum" the authors state that a bond with an 8.5 percent interest rate and a debt coverage ratio of 2.0 would be more appropriate. Debt coverage ratio is a figure that investors demand to insure adequate revenue for payment of bond interest, or "debt service." A debt ratio of 2.0 implies that the yearly income from the project must be at least twice the dollar value of the interest paid to investors over the same period.

In the confused tax-exempt market conditions that prevailed following the New York City defaults in 1975, up to 9 percent interest rates were demanded on long-term municipal debt. But in the stable market of 1977, the required interest rates dropped

nearly to 6 percent on grade A revenue bonds. Debt coverage ratios have also trended downwards. When the Springfield officials were negotiating their aborted revenue bond issue in August 1977, the debt coverage ratio was pegged at 1.2 or 1.1. Uncertainties of this magnitude make the economic performance of the project difficult to estimate with confidence. Yearly required revenue for debt service on a \$50 million bond issue may vary from \$8.5 million with 8.5 percent interest and 2 times debt coverage to \$3.3 million at 6 percent and 1.1 times debt coverage.

However favorable the terms secured in the municipal bond market, it is evident that power from the Black River will not be inexpensive. Table 5 shows the project's cost per kilowatt-year calculated on the basis of three different costs of financing: the pessimistic outlook of 2.0 times debt coverage and an 8.5 percent interest rate proposed by CVPS; the "average" value of 1.4 times debt coverage and a 7.5 percent interest rate used by R.W. Beck in its various feasibility studies; and an optimistic 1.1 debt coverage ratio and 6.5 percent interest rate. The average annual energy output from the project is figured to be 45,730,000 kilowatt-hours.

In order to interpret Table 5 properly, it is important to realize, first, that the costs reported are in 1982 dollars. Second, for a proper comparison of relative costs, the Black River project should be compared with another peaking power source such as a combustion turbine. This comparison was made in

TABLE 5:
 RANGE OF ELECTRICITY COSTS FROM THE BLACK RIVER PROJECT
 (1982 dollars)

<u>Revenue Requirement</u>	<u>Debt Coverage Ratio</u>	<u>Interest Rate</u>	<u>Cost (mills/kilowatt-hour)</u>
\$ 8,304,000	2.0	8.5	182
5,129,000	1.4	7.5	112
3,493,000	1.1	6.5	76

Source: R.W. Beck and Associates, Final Feasibility Report: Black River Hydroelectric Project, Seattle, WA (August 1977).

the project's Final Feasibility Report (August 1977). The analysis assumed a 1982 annual capital cost of \$57.48 per kilowatt of capacity, a 1982 variable cost of 65.15 mills per kilowatt-hour, and a fuel, operation, and maintenance cost escalation rate of 7 percent for the turbine. With these assumptions and the "average" bond performance values, the report arrived at a net cumulative cost benefit to Springfield by 1991. More pessimistic assumptions, of course, move this breakeven date further into the future, but because the anticipated lifetime of the project exceeds fifty years, Springfield officials are not concerned about modest uncertainty over the length of the payback period.

CONCLUSIONS

Issues raised by the Black River project are still many years from resolution. Yet Springfield's example has had a strong and positive impact on many other Vermont communities and on the state as a whole. It has contributed to the recognition of local hydropower as a valuable energy resource. Among the developments that can be wholly or partially attributed to Springfield's example are:

- twenty proposals from Vermont submitted to the Department of Energy for funding of hydro feasibility studies (four received grants);
- public referenda dealing with the development, renovation, or acquisition of hydro facilities held in sixteen Vermont towns in 1978;
- the active pursuit of local hydropower capability by two neighboring towns--Windsor, Vermont, and Claremont, New Hampshire--who have secured consultants.

Springfield's energy resources are not unique. As time passes, other municipalities will become interested in using their own rivers and streams to produce power. Development will not occur easily or quickly, but others will undoubtedly profit from the precedent and experiences of Springfield.

Springfield has been extraordinary only in its good fortune to have had a group of selectmen and a town manager with the foresight, fortitude, and sense of cooperation needed to carry the project through. The Black River project has been a fight from the start, and the town's officials have received no special rewards for the burdensome tasks that they have undertaken. Many other communities without similarly determined leadership would find the obstacles that have beset Springfield overwhelming.

Greatest among these obstacles is probably the FERC licensing procedure. It is both costly and time-consuming, without any assurance of a positive outcome. Preparation of an application is an expensive risk, in view of which it is difficult to imagine why a public official with little to gain and much to lose from the initiative would ever attempt it. Should Springfield's application be rejected by FERC, the town's officials would be held responsible for a substantial waste of effort and taxpayers' funds; other public agencies would inevitably be deterred by their unfortunate example from pursuing similar actions. It is imperative, therefore, to reduce the risks associated with federal licensing. Of course, the spectrum of positive and negative consequences associated with all small-scale hydro proposals means that some should be rejected. But the licensing procedure must, and can, be simplified so that an effort like Springfield's will not expose a small town to the loss of nearly \$1 million invested in the licensing procedure and associated litigation and analysis.

In light of Springfield's Black River project, we question the need for any federal licensing at all on such projects. The environmental impacts of the project, albeit significant, are confined to a small area within one state. The river in question has no impact on interstate commerce and only an insignificant effect on the rest of the Connecticut River basin. Even though the proposed sale of surplus power will probably fall within federal jurisdiction, its impact on interstate commerce will be imperceptible. The assessment of environmental impact need not be conducted by a federal agency. Leaving the analysis to the

state government could speed the overall process. We therefore also support the designation of a state agency to oversee and encourage through technical and information services the development of hydroelectric power in Vermont, at the same time as providing needed interagency coordination.

Another factor discouraging small-scale hydropower is the current configuration of utility rate structures and related contracts and agreements. Only peaking or baseload power can be sold under standard contracts. Run-of-river power, which is intermittent, is not deemed worth development. Such an attitude supports the continued waste of a viable energy resource that could reduce rapidly escalating oil imports and provide statistically assured power capacity while minimizing the environmentally detrimental effects of fluctuating reservoirs.

Even if, as Springfield concluded, peaking power is the best use for water resources, the goal of maximizing utilization of existing resources should prevail. As it stands now, government regulations do not adequately recognize the environmental advantages of retrofitting existing dams with new turbines rather than building new dams. Neither has there been adequate recognition of the benefits of incorporating existing structures into new power projects, such as flood control dams that could supply needed storage capacity without unduly and adversely affecting their designed purpose. Governmental interagency rivalry and proprietary attitudes too often interfere with the orderly and efficient development of waterways.

Licensing at the state level is one way to mitigate the problems of interagency coordination; another is to develop, as

soon as possible, comprehensive plans for Vermont's waterways. This would enable the planners of small-scale hydropower projects to anticipate and incorporate the needs of all of a river's various user groups, rather than having to backtrack to incorporate those needs after a project is well underway. If the goals to be served by each waterway were properly defined, the development of Vermont's hydropower resources could be focused on the most appropriate locations. The river system should be used for multiple purposes, but it should not fall to the proponent of a dam to sort out the priorities and pay for amenities that lie outside the scope of the power development program. Rather, the state should help establish guidelines and then expect that dam developers will carry out their projects in areas where power production is an accepted use. In those areas other groups should pay for recreation, fisheries, and other functions unrelated to the central purpose of the dam.

Springfield's experience with the Black River project suggests that any would-be municipal developer of small-scale hydropower must be prepared to meet with litigation and to incur sizeable expenses before the success of the project is assured. Much of the resistance will come from private utilities, although Springfield also learned the importance of local politics to achieving its goal. Attorneys' fees and consultants' services are the greatest financial drains, but no town committed to alternative energy sources can afford to skimp on them. Most of this work and money is consumed in order to satisfy the time-consuming requirements of federal licensing procedures.

Springfield's experience also suggests, however, that these obstacles are not insurmountable, if there is public support and municipal leadership for a project. There is every indication that financial backing is available for such developments, and their financial rewards are significant and fairly predictable. If the changes we have advocated can be brought about, small-scale hydropower--a valuable and regionally generated energy resource--should have a bright future in New England.

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APPENDIX A:
CHRONOLOGY OF BLACK RIVER POWER PROJECT, SPRINGFIELD, VERMONT

1975

- Jan. 23 Plans to develop local hydropower are unveiled at a noon press conference. A feasibility study by R.W. Beck and Associates of Seattle is displayed. This report has been prepared in order to fulfill requirements for a preliminary application to the Federal Power Commission (FPC). Complete secrecy was maintained to prevent others from securing FPC river study rights. It is announced that a \$57 million bond authorization will be requested at a town meeting to supply funds for the hydro project. Plans call for the purchase of power transmission facilities from Central Vermont Public Service Corporation (CVPS), the construction of two new dams, and the renovation of six others. Total output is placed at approximately 22.5 Mw. The largest dam is to be constructed in the neighboring town of Cavendish. This will necessitate the acquisition of 500 to 800 acres for a five-mile reservoir. The project is justified on the basis of steadily rising electricity costs, which had increased 99 percent in the previous five years.
- Feb. 18 CVPS holds the first of its own information meetings. Officials declare that the Beck report overestimated anticipated power production and underestimated costs.
- Feb. 29 Dubois and King, Inc., issues a study paid for by the town of Cavendish. The results state that the Hawks Mountain dam located in Cavendish will create environmental and aesthetic problems.
- March 3 Cavendish residents vote strongly against Springfield plans at a town meeting.
- March 4 Springfield approves the development of a municipal utility by a large margin. Article 20, which allows the Springfield selectmen to take over transmission facilities, to market electricity, and to buy necessary land, is passed 2,203 to 626. Article 21, which encompasses all finances, including the \$57 million bond issue, likewise is passed, 2,096 to 658.
- March 24 "Concerned Citizens of Cavendish" is formed specifically to fight Springfield's dam proposal.
- April 2 CVPS president James Griffin claims that the loss of Springfield will mean higher rates for all other customers. Springfield absorbs 5 percent of CVPS output and produces \$2.8 million in revenues annually.

- April 14 Legislation proposed by State Representatives John Murphy (D-Ludlow) and William Hunter (D-Weathersfield) is passed into law. As a result, Springfield is unable to employ the right of eminent domain in the acquisition of land from neighboring towns for the period of one year.
- April 17 Windsor County's State Attorney Michael Sheehan reveals that Springfield officials are under investigation. The investigation was initiated by a private party and no formal charges were brought. A charge has been filed that the selectmen's secret meetings, held prior to January 23, violated the state's "right to know" law.
- May 8 CVPS files to intervene with the FPC. The private utility also challenges, on technical grounds, Springfield's notice to the Public Service Board (PSB) of its intent to purchase distribution facilities.
- June 4 CVPS files a lawsuit in Windsor County Superior Court charging "right to know" violations.
- July 7 Springfield requests hearing with the PSB after CVPS refuses to provide information about the price of its assets.
- July 21 Vermont Attorney General Jerome Diamond rules that Springfield has not violated "right to know" laws.
- Aug. 5 Alternative siting of the Hawks Mountain dam is proposed at a joint meeting with Weathersfield. The attempt is made to decrease the effects of the reservoir tailwaters on the town of Cavendish.
- Sept. 10 R.W. Beck publishes a report on the acquisition of CVPS transmission facilities. The project is declared reasonable and is estimated to cost \$5.5 million.
- Oct. 13 Keene, New Hampshire, follows Springfield's example. R.W. Beck is hired to produce a hydro feasibility study.
- Dec. 12 P.F. Jurgs Company of Burlington, Vermont, and W.E. Davis and Associates of Leawood, Kansas, are contracted as financial consultants for the hydro project.

1976

- Jan. 8 Senate Bill S.185 is introduced by Gerald Morse (R-Caledonia) to continue to prevent Springfield from exercising the right of eminent domain in another town through March, 1977.
- Jan. 12 Springfield is granted a preliminary permit by the FPC.

- Feb. 6 Bill S.185 is sent out of committee. It is amended to prohibit any town from condemning land in another town for hydro schemes.
- Feb. 25 The investment consultants report: Springfield has a AA credit rating and should have no trouble selling bonds necessary for the acquisition of CVPS transmission facilities.
- March 1 R.W. Beck proposes scaled-down hydro plan. The Hawks Mountain dam would be constructed in Weathersfield and two smaller dams would be dropped. Costs would be decreased by \$4 million.
- March 16 The first meeting of CVPS and Springfield over purchase of power facilities is convened. CVPS pegs cost at three times the value estimated by Beck.
- March 18 CVPS claims to represent taxpayers of Springfield in "right to know" suit vs. Springfield selectmen.
- March 24 S.185, as amended, is passed 76-46 by the House and signed into law by Governor Salmon. Heavy lobbying is apparent by CVPS and the Green Mountain Power Company, whose action coincides with increased interest by the townspeople of Barre, Vermont, in a project similar to Springfield's.
- Sept. 1 A final feasibility report is presented by Beck recommending a six-dam system (see Table 2). The total cost of studies required by FPC for final application is estimated at \$800,000.
- Sept. 24 There are two significant events. The Vermont Public Service Board rules that Springfield met all legal requirements for announcing 1975 town meeting. A joint legislative committee to study the state's policy on eminent domain adopts a final report that proposes only minor changes to existing state laws.
- Dec. 5 New England Power Planning Group Director James Sinitz and Army Corps Chief Engineer John Leslie declare at a town forum that the hydro plans are inadequate and ill conceived.

1977

- Feb. 15 Two large public meetings are held under the auspices of
& 23 the Southern Windsor Regional Planning and Development Commission. In attendance are members of both the FPC and the state agencies for energy and environmental conservation.

- Feb. 27 Springfield's right to exercise eminent domain surfaces in the Vermont legislature for the third time. However, the state committee recommends only minor changes to existing laws.
- April 1 A bill proposed by State Senator Chester Scott, a Springfield selectman, reaches conference. If it is allowed, municipal power companies will be able to enter into contracts with private power companies. This will enable neighboring townships too poor to purchase transmission facilities outright to buy and to distribute Springfield's hydropower.
- April 26 CVPS has appealed the Sept. 29 decision of the PSB. The Supreme Court of Vermont agrees to hear the case.
- May 20 New Hampshire power utilities publish a report stressing the prohibitive costs of developing or redeveloping hydro sites.
- Sept. 7 Springfield joins Vermont Public Power Supply (VPPS) in hopes that the other twelve municipalities which are members will serve as a market for excess hydropower.
- Sept. 12 The Supreme Court overrules PSB and invalidates the 1975 town election. Springfield selectmen schedule an October 20 election with the bills previously passed restated. If the October 20 vote is positive, the selectmen predict a delay due to the decision of only around five weeks.
- Oct. 20 The election is held in Springfield. A record turnout of over 50 percent of the town's eligible voters cast ballots. The results are more than two to one in favor of the hydro project. Article 20 is passed 2,260 to 893. Article 21 is also passed, 2,264 to 892.
- Dec. 16 Springfield officials meet with FERC staff to discuss a draft of the licensing application. Written comments concerning draft-of-application deficiencies are received from the staff. These are incorporated in the final draft of the application.

1978

- Jan. 31 Voters in Cavendish narrowly defeat a motion that would have prevented any further town expenditures in opposition to the Black River project.
- March 17 Attorneys for Springfield and CVPS meet to create a schedule for pretrial discovery.
- April 3 Springfield submits its discovery demands to CVPS.

- May 3 CVPS responds to the Springfield discovery demands.
- May 22 The Vermont PSB begins official hearings on the municipal takeover of CVPS facilities by Springfield.
- June 5 Testimony by Springfield and CVPS officials is offered before the U.S. House of Representatives Subcommittee on Energy and Power. The hydro licensing application, in final form, is hand-delivered to the FERC office.
- July 3 Springfield files its pretrial testimony with the PSB.
- Aug. 1 CVPS files discovery demands.
- Aug. 23 Springfield responds to CVPS discovery demands.
- Aug. 24 A deficiency letter is issued to Springfield by FERC indicating major deficiencies in license application exhibits K, S, V, W.
- Dec. 31 Springfield resubmits license application.

1979

- Jan. 10 Springfield submits preliminary permit application to study the feasibility of the proposed 3-Mw North Springfield hydroelectric power project on the Black River.
- Feb. 9 CVPS files pre-filed testimony.
- Feb. 12 FERC accepts Springfield license application.

APPENDIX B: FERC REVIEW PROCESS

(cont. on
next page)

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V. File: License application with the FERC
 - The FERC offices review for deficiencies

Accepted and Docketed

Rejected--
 returned with
 deficiency letter

corrected application
 refiled with FERC

VI. The FERC begins processing license application

Application section appoints project manager, reviews for general adequacy

EIS Required for major
 new projects with sig-
 nificant impacts

EIS Task Force formed
 - one representative from each
 FERC office
 - Draft EIS (DEIS) prepared from
 application and agency comments
 on application

DEIS circulated for comment to
 agencies, parties, experts, intervenors
 - comments received, passed on to
 applicant
 - applicant response received

Final EIS prepared, circulated

Contested issues
 decided by Adminis-
 tration Law Judge

Appealed to U.S. Court of Appeals → successful

Appeal

successful

successful

successful

successful

successful

successful

successful

successful

successful

successful

successful

(cont. on next page)

(cont. from previous page)

VII. Commissioners receive Power Memorandum, final EIS, Commission Order

VIII. Commission Acts on License Application

- is the project that best adapted to the comprehensive development of the waterway?
- is the project best developed by the Federal government?
- is the project in the public interest?

Approved

Without burdensome conditions
(appeal by intervenors)

With burdensome conditions (appeal by applicant and intervenors)

Denied

appeal by applicant

Denied with recommendation to congress that U.S. develop site (two-year moratorium on site)

U.S. Circuit Court of Appeals

U.S. Supreme Court

Project Undertaken

Project Not Undertaken

APPENDIX C:
EXPLANATORY NOTES AND DEFINITIONS
OF PURPOSES FOR CHART OF PROJECT EXPENSES

- #1 Costs incurred for the initial Hydro Appraisal Report (Jan. 1975). This was the first analysis which established a clear economic potential for the project.
- #2 Total legal costs incurred for both acquisition and hydro activities. No attempt has been made to identify, by quarter, specific legal services rendered.
- #3 Bridge work order for interim services and engineering rendered following the culmination of the Appraisal Report work order.
- #4 Costs incurred for FPC Preliminary Permit Application (Jan. 1975).
- #5 Costs for Hydroelectric Evaluation Report (August 1976). This more precise engineering estimate served as the justification for proceeding further with the project.
- #6 Costs incurred for distribution and acquisition reports including: Appraisal Survey, Feasibility Report, engineering and testimony related to subsequent condemnation proceedings.
- #7 Land and land rights--expenditures for the purpose of acquiring options, rights of entry, and clearing, and for services rendered by others to secure those land rights.
- #8 Special consultants and services and grants--for specific work outside the scope of work orders to R.W. Beck. This also includes matching funds for federal cost-sharing agreement with U.S. Geological Survey for a stream gauging station.
- #9 Administration and general--reimbursement for various direct expenses including: printing, postage, dues, meeting and travel costs, books, and publications.
- #10 Interest cost (at 8 percent) on accounts payable to R.W. Beck incurred while waiting for Vermont Supreme Court to rule--a prerequisite to securing financing.
- #11 Costs incurred for FERC license application and supporting exhibits which were filed at FERC.

CHART OF PROJECT EXPENSES

TOTAL COSTS TO TOWN OF SPRINGFIELD JANUARY 1975 THRU SEPTEMBER 1977

Purposes	1975				1976				1977			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd (To Date)	Total To Date
1. Appraisal report	26,954.37	0	0	0	0	0	0	0	0	0	0	\$ 26,954.37
2. Legal costs	*	*	*	*	*	*	*	*	*	*	*	39,665.95
3. Bridge work order	3,630.84	0	11,085.07	0	0	0	0	0	0	0	0	14,715.91
4. FDC permit application	0	0	5,045.63	0	0	0	0	0	0	0	0	5,045.63
5. Evaluation report	0	0	0	21,211.78	0	60,557.07	150,000.00	0	16,553.34	0	0	248,422.19
6. Distribution & acquisition reports	0	0	0	51,577.81	0	0	0	0	44,206.60	6,635.64	19,444.91	121,864.96
7. Land & land rights	0	0	0	*	0	*	0	*	*	*	0	14,133.85
8. Special consultants	0	0	0	0	7,425.00	0	0	0	3,547.51	5,170.81	14,516.04	30,659.36
9. Admin. & general	0	0	0	0	0	0	180.00	341.00	145.75	104.03	1,046.06	1,744.84
10. Interest costs on accounts payable	0	0	0	0	0	0	0	0	0	6,456.06	9,830.38	16,286.44
11. FPC license application	0	0	0	0	0	0	16,428.87	73,710.12	70,596.68	37,906.95	4,650.00	203,292.72
Quarterly Totals												
(Less legal & land)	30,585.21	0	16,130.70	72,789.59	7,425.00	60,657.07	166,536.97	74,051.12	135,049.88	56,273.89	49,487.39	722,786.22

* see Note 2, previous page.

APPENDIX D: MUNICIPAL BONDS

The importance of municipal bonds as low-cost sources of capital is commonly acknowledged, but there is generally poor understanding of their benefits and pitfalls. Municipal bonds are one example of tax-exempt bonds; industrial development and "pollution control" bonds are other types. The interest paid to the investor on tax-exempt bonds is not subject to income tax requirements. With this advantage, investors demand smaller interest payments.

Long-term municipal bonds are of two varieties: general obligation and revenue bonds. In the past, general obligation bonding was the more popular of the two, but in recent years this preference has been somewhat reduced. The \$35 billion of municipal bond issues marketed in 1977 were about equally distributed in dollar value between the two types. But the average revenue bond issue is typically for a much greater amount than the value of general obligation (G.O.) bonds. For example, 10 percent of the revenue bond issues in 1975 were for sums greater than \$25 million. Thus the greater number of issues are still G.O. bonds.

G.O. bonds pledge the full faith and credit of the community against the bond issue. It is the community's income from taxes that is promised for bond repayment. Consequently the marketability of any G.O. bond issue is dependent upon the financial status of the borrowing community. This financial information is transmitted to an investor by means of a credit rating obtained from an investor service (usually Moodys or Standard and Poors) prior to any bond sale. Depending on the size of the community, a ceiling is usually placed on the total amount of G.O. funds obtainable. In Vermont and other states there are statutory laws that cover the authorization and issuance of both G.O. and revenue bond issues. The issuance and marketing of the bonds is a straightforward procedure and it is difficult to delay or block.

Revenue bonds are similar to G.O. bonds in many respects, but they are tied to a project's ability to produce adequate revenue for loan repayment rather than to the income of the community at large. A bond rating is also generally issued for a revenue bond sale, but it is dependent on an evaluation of project feasibility. The total amount of revenue bonds available to a community depends wholly on the project's costs and estimated returns. Legal costs tend to be greater for revenue bonds than for G.O. bonds. While most G.O. bonds are sold through public competitive bidding, about half of the revenue bonds in 1975 were marketed through negotiated sale.

The difficulty with all municipal bonds comes in the prediction of future market behavior. Tax-exempt securities are a highly volatile commodity and they are much more vulnerable to supply-demand market forces than are their taxable counterparts. For example, in 1975, when New York City defaulted on its G.O. bonds, shock waves went out through the investment community. While municipal rates were 65 to 70 percent of corporate securities with similar maturities, in August rates were 75 percent and in October they stood at 80 percent. A similar fluctuation occurred in 1970 when there was inadequate capital to meet the surging supply of tax-exempts. Such fluctuations make any predictions about future bond markets matters of substantial uncertainty.