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TECHNICAL CLARITY IN INTER-AGENCY NEGOTIATIONS: LESSONS FROM FOUR HYDROPOWER PROJECTS[1]

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ABSTRACT: We investigated the effect of technical clarity on success in multi-party negotiations in the Federal Energy Regulatory Commission (FERC) licensing process. Technical clarity is the shared understanding of dimensions such as the geographic extent of the project, range of flows to be considered, important species and life stages, and variety of water uses considered. The results of four hydropower licensing consultations are reported. Key participants were interviewed to ascertain the level of technical clarity present during the consultations and the degree to which the consultations were successful. Technical clarity appears to be a prerequisite for successful outcomes. Factors that enhance technical clarity include simple project design, new rather than existing projects, precise definition of issues, a sense of urgency to reach agreement, a sense of fairness among participants, and consistency in participation. Negotiators should not neglect the critical pre-negotiation steps of defining technical issues and determining appropriate studies, deciding how to interpret studies, and agreeing on responses to study results.
(KEY TERMS: water policy/regulation/decision making; water development; water law; water resources planning; water management; instream flows; conflict resolution.)

INTRODUCTION

The Federal Energy Regulatory Commission (FERC) issues operating licenses for non-federal hydroelectric power facilities. The process of granting these licenses involves consultations between license applicants and parties representing affected resources. The consultations typically revolve around issues such as minimum flow releases, habitat protection, and appropriate mitigation measures. Participants in the consultations may include state and federal fish and wildlife managers, project applicants and their consultants, representatives of public interest groups, and tribal representatives. Resource agencies are charged with the protection of fish and wildlife resources, and their goal is to continue to provide the highest possible level of protection. Applicants are expected to provide power to customers at the lowest possible rates. This means completing projects with few delays and few add-on costs, because ultimately the consumer will be asked to compensate the power company for all expenses. Because these goals are sometimes incompatible, the negotiations associated with FERC licensing and re-licensing can be contentious. The FERC has the final word on each license and must balance conflicting interests when drawing up the conditions of the license. However, parties are encouraged to resolve as many differences as possible during the consultation process.

Negotiations are means of distributing gains and losses. Scientific evidence can sometimes quantify gains and losses so that parties to a negotiation can reach equitable agreements. But if no initial agreement is reached on how to measure the gains and losses, a dispute may well become intractable. Although it may appear obvious that parties to a dispute should decide exactly what the problem is before attempting to solve it, those involved in negotiations often neglect to discuss, beforehand, the specific points that must be reconciled. Even if the specific points are agreed upon, it is common to disagree on how to study the problem or how to interpret studies after they are conducted (Ozawa and Susskind, 1985). The FERC licensing consultations we studied revolved around reaching agreement on technical issues, such as the geographic extent of the project, range of flows to be considered, important species and life stages, and variety of water uses to be included in any assessments. Without resolution of these issues,

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the licenses would be without substance. We investigated the effect of the clarity of technical issues on success in negotiation.

METHODS

In 1992, researchers at the National Ecology Research Center of the U.S. Fish and Wildlife Service designed a study to test hypotheses about factors contributing to successful negotiations. This group of researchers is now affiliated with the National Biological Service. The definition of a successful negotiation was based on the work of Lee (1982), who described the following characteristics (see also Bingham, 1986):

1. Each party believes that an agreement was reached.
2. The agreement included an understanding of implementation procedures and could be monitored.
3. The parties are willing to engage in future negotiations.

The study team hypothesized that six conditions must be present for successful negotiation to occur:

1. All identifiable stakeholders are represented in the negotiations (Cormick 1980; Susskind and Weinstein 1980; Susskind and Cruikshank 1987).
2. All parties recognize a need for negotiation (Fisher and Ury 1981; Lee 1982; Bacow and Wheeler 1984; Bingham 1986).
3. Each party has sufficient power to prevent any other party from acting unilaterally (Cormick, 1980; Susskind and McMahon, 1985; Delli Priscoli, 1987).
4. Each party is able to commit itself and its constituents to implementation (Cormick, 1980; Susskind and Weinstein, 1980; Bingham, 1986; Carpenter and Kennedy, 1988).
5. There is a sense of urgency in the negotiations (Cormick, 1980; Susskind and McMahon, 1985; Bingham, 1986; Delli Priscoli, 1987).
6. Technical issues are clear (Susskind and Weinstein, 1980; Bingham, 1986; Susskind *et al.,* 1987; Susskind and Cruikshank, 1987; Clark *et al.,* 1991).

To study FERC licensing negotiations, researchers used comparative case studies in a Most Similar Systems design (Przeworski and Teune, 1970). This design requires that cases chosen are as similar as possible, with differences among the cases believed to be explanatory. Candidate cases were compiled by personal contact with U.S. Fish and Wildlife Service field office personnel and met the following criteria:

1. The case involved at least three and no more than 15 parties.
2. The decision was negotiated in the FERC licensing or re-licensing process.
3. The case involved riverine resources as the main focus of mitigation negotiation.
4. The project was located in either the Northeastern or Northwestern U.S.
5. No third party imposed its will on the negotiators before they could reach agreement.
6. Actual negotiations did not rise above the Regional Office level.
7. The case was resolved after the Public Utilities Regulatory Policies Act (PURPA) [16 U.S.C. 2601-2633f] and the Electrical Consumers Protection Act (ECPA) [16 U.S.C. 791a-825s] were enacted.

From an initial list of 26 cases, 10 were chosen. Efforts were made to balance the cases in terms of geographic location, public or private ownership, and project size. Cases were chosen in two geographic regions to minimize the effects of regional peculiarities. To date, data collection and analysis have been completed on four of the projects.

Data collection involved two separate tasks. First, we obtained records of the negotiations from Fish and Wildlife Service personnel. These records were used to compile case histories and give the researchers a sketch of how the consultations had proceeded. Second, we conducted structured personal interviews with project participants. Questions were designed to test the presence of the six variables hypothesized as necessary for negotiation success and to rate the level of success of the negotiations. Each negotiation was divided by the researchers into three phases to reflect the current FERC consultation structure of first, information-sharing; second, conducting studies; and third, license application. Respondents were questioned about each of the six variables in each phase. Thus, the researchers were able to analyze change in the degree to which each variable was present throughout the process. The questions used to evaluate clarity of the technical issues are presented in Table 1. All interviews were tape recorded and later transcribed, with the permission of those interviewed.

FINDINGS

Koma Kulshan

The Koma Kulshan project is located in northwestern Washington state on Sandy and Sulphur Creeks. The facility was constructed during 1989 and 1990,

TABLE 1. Questions Posed to Evaluate the Clarity of Technical Issues.

1.	At this phase, did the parties involved agree to the definition of the instream flow problem? – the geographic extent – the range of flows to be considered – the important species and life stages – the recreation and other water uses to be included
2.	Did *you* agree with the definition of these technical issues? If "NO": If not now, then when? [Identify phase.]
3.	At what point was the study clearly defined?
4.	Once established, was that understanding ever lost? Did it fluctuate, or remain constant?
5.	For this phase, please rate the technical bounds on a scale where 1=completely obscure – to – 10=complete clear.
	For subsequent phases, respondents were asked:
6.	Did technical issues change during this phase? If "YES": Were new technical issues introduced, or did the existing issues change? Did *you* agree to these changes?
7.	How clear were the technical issues? 1=totally obscure – to – 10=complete clear.

and the project began operating in 1991. The pre-license consultation began in 1980 and focused on issues of stream flow, sedimentation, and public access. These issues were fully resolved before the license was issued in 1986. Participants reported that because the physical impacts of the project were expected to be minimal, the level of conflict was low. In February of 1992, participants in the consultation were interviewed.

The negotiated agreement reached in the Koma Kulshan consultation was rated as fully successful according to our study criteria. All parties believed that a successful agreement was reached; eight of the ten stated that the final agreement contained provisions for monitoring (the other two did not recall); and each individual reported that he or she would willingly negotiate with the same group in the future. In fact, this group of people often find themselves in negotiations with each other. This willingness to negotiate with the same parties in the future was found in all of the cases we studied.

Because the physical impacts of the project were not of great concern, there were no intractable conflicts around the issue of technical clarity. This is not to say that there were no disagreements, only that the disagreements did not halt the consultation process. One area of uncertainty was that of cumulative impacts. Resource agencies requested the applicant to conduct a cumulative impact assessment but were not specific about what this meant. In the words of a representative of the applicant:

> [I]t [cumulative impact assessment] is a valid issue. What I did have trouble with is that no one could really define what they meant by "cumulative impact." I'd say "O.K., what do you want us to do?; what is it that you're really concerned about?" When we finally did get things pinned down, it came down to sediment, that was the major thing; that was something that was tractable.

The typical progression in terms of clarifying issues tended to follow the pattern of the cumulative impact issue. When technical issues were initially encountered, they were painted with a very broad brush. This lack of specificity led participants to believe that the problem was unmanageable. However, because a general belief existed that others were acting in good faith, these unclear issues were discussed until the scope was narrowed and strategies were designed to address them. Thus, the trend was for technical clarity to increase throughout the course of the consultation.

Another reason for increased technical clarity was that many issues simply were not raised in the early part of the negotiation. As the project unfolded, the scope and nature of the appropriate issues became apparent. Applicants and resource agencies began the process cognizant of the fact that certain generic issues would be raised: flow, habitat issues, mitigation, and the like. It was not until the specific site was examined that other issues arose. For example, a

plant on the state's threatened species list was found in the path of a pipeline; this necessitated design changes in the project.

Although the Koma Kulshan consultation was successful, agreement on the definition of issues did not guarantee agreement on means of resolving the issues. While the parties concurred that instream flows were a central issue in the consultation, they disagreed over target species and appropriate methodology for determining flow levels.

Applicants and resource agency representatives had different forms of expertise and tended to elevate the importance of their special training and knowledge. Applicants questioned the ability of the resource agencies to understand the engineering aspects of the project, while resource agencies stated that their interpretation of biological studies was, essentially, infallible. These attitudes seemed to lead to increased conflict in the consultation.

Oswegatchie

The Oswegatchie project in New York includes six dams on a section of river stretching over more than 70 miles. Originally licensed in the 1920s, the project received a renewal license in 1983. Included in the license was a requirement for consultation between the power company and resource agencies in order to determine minimum flow releases. After two years of non-action, the power company requested that it be relieved of its obligations to consult on grounds of non-compliance by the resource agencies. FERC denied the request, and consultations were reinstated. From 1986 to 1989, studies were conducted and agreement was reached on all issues except minimum flow releases in one bypass reach. Conflicting recommendations were submitted to FERC, and the order issuing minimum flows upheld the recommendations of the power company. State and federal resource agencies objected, and the state suggested re-evaluating the 401 Water Quality Certificate, required under the Clean Water Act (Federal Water Pollution Control Act; 33 U.S.C. § 1251-1376). The grounds for the objection were that project operation would significantly alter stream conditions and that higher flows would be needed for waste assimilation. At the time the interviews were conducted, in July of 1992, these issues had not yet been resolved.

The negotiations associated with this project were assessed as minimally successful. As a result of the two outstanding issues discussed above, not all parties believed that the negotiation was successful. The other two criteria for successful agreement were met.

The Oswegatchie project was complex in that it included six dams stretching over 70 miles. However, the consultations themselves were single-issue, focusing on streamflows in bypass and downstream reaches. When parties were asked about the clarity of technical issues, a typical reply was:

> I think it [the technical issue] was pretty well defined. The issue was flows in selected riverine reaches. And there's no question, we all knew what the issue was; I think it stayed focused. It didn't waiver, which was unique. But, of course, this was intended to be sort of a one issue consultation.

While the issue was clear to all, no agreement was reached on appropriate flows in all reaches. One resource agency representative attributed the failure to reach agreement to a lack of consensus on how to design and interpret studies. A representative of the applicant reflected that the difference in goals between project operators and resource agencies was at the heart of the problem when decisions could not be made. Despite the expectations of some that the simplicity of the issues would be reflected in a straightforward resolution, no agreement was reached. The applicant believed that maintaining a winter flow of 15 cubic feet per second in the contested reach of river was reasonable, and the resource agencies recommended a 30 cfs flow. Unable to reach agreement on this issue, each provided a separate recommendation to the FERC.

Cataract

The Cataract project in Maine consists of four dams. The original license was issued in 1968, backdated to the operating date of 1938, and expired at the end of 1987. The power company initiated the 60-day consultation process in June of 1984, received comments from agencies and other affected groups, and submitted the license application to FERC in July of 1986. In order to comply with the Electrical Consumers Protection Act of 1986 (ECPA), which changed the requirements of the consultation process, FERC returned the application to the applicant with a request for further consultation with resource agencies. After consultation on issues of minimum flows, fish passage, resource impacts, and public access, the application was revised and returned to the FERC in January 1989. The license was issued in June of that year but was not satisfactory to fishery resource agencies because it did not resolve issues of river-wide fish passage. The state also intervened on the grounds that the license did not stipulate flows below the Cataract dam adequate to satisfy terms of the Section 401 Water Quality Certification required under the

Clean Water Act (Federal Water Pollution Control Act; 33 U.S.C. § 1251-1376). The FERC post-dated the license to include the 401 Water Quality Certification so that conditions of the certification were included in the FERC license. At the time of our interviews, in July of 1992, the applicant was contesting this action. The negotiations associated with re-licensing the Cataract project were considered minimally successful because of those unresolved issues.

During the first phase of the Cataract negotiation, several general areas of agreement existed. All parties agreed on the need for aquatic base flows throughout the project area, the desirability of designing a comprehensive river plan, and the need for fish passage. Parties did not agree about the geographic extent of salmon restoration efforts or the need for determining minimum flows below Cataract dam to protect the estuary below the dam. Disagreements also surfaced about appropriate timetables for constructing fish passages. When asked to rate the clarity of the technical issues at this time, respondents rated clarity between six and eight on a ten-point scale.

In the second phase, some of the earlier issues were clarified, but other issues were raised. For example, the effect of the project on the estuary was recognized as an important potential impact, while the fish passage issue was clarified because parties reached agreement on how to approach the problem. When discussing the consultation process in terms of its ability to define and resolve issues, the following interchange occurred:

> **Q:** Once established, during that first phase, was the understanding of what the technical issues were, ever lost?
> **A:** I think what the consultation does, and certainly what it did in Cataract, is, it better defines [issues]. As we went through this process, we better defined maintenance drawdown as a potential habitat concern. Better defined certain fish passage issues. So I don't think anything was lost, just better defined, which is the goal of that process.

While some issues were clarified as the process moved forward, others became muddier or were dropped altogether. For example, earlier discussions about a comprehensive river plan were discontinued so that, rather than studying the Saco River as a whole, only the portion of the river affected by the Cataract project was considered. The applicant had attempted comprehensive river planning on another river, but the plan was never implemented. Thus, there was reluctance to repeat this costly exercise. The subsequent exclusion of comprehensive planning for the Saco River effectively limited the scope of the issues in a way that was unsatisfactory to some participants. The question was not one of clarity. The issues were clear, but not all parties agreed with the scope and definition.

A more controversial issue that arose during the second phase concerned the lack of a Section 401 Water Quality Certificate for waste discharges of the cities of Biddeford and Saco below Cataract Dam. During the course of the consultations, the state agency realized that although the discharges had been occurring for a number of years, no minimum flow agreements were in place. The state agency requested that project operators release flows to assimilate the discharges and planned to make these flow releases part of the license. However, the operators replied that because the dam was built first, the utility had no responsibility to provide present or future assimilative capacity. The position of the utility was that the problem was due to the state's mistake and that the state had no authority to require assimilative releases from the utility. Ultimately, the utility entered into agreements with both cities to provide this capacity. The applicant stated that the attempt to include this issue at the eleventh hour detracted from technical clarity; the resource agency believed that addressing this issue led to increased technical clarity. At the heart of the debate was whether the issue of flows below the Cataract dam was properly included as part of the license consultation, even though it was clear that diluting the waste stream was a legitimate issue.

The disagreement about the state's authority to require 401 certification as a license condition carried over into the post-license phase and was still alive at the time of our interviews. In the final phase, the applicant stated that the clarity of the technical issues dropped, largely due to the lack of resolution on the minimum flow issue below Cataract dam. During this phase, the applicant rated the clarity of technical issues at three on a ten-point scale. All other participants gave ratings between eight and ten.

Flow-related questions are usually central in consultations of this kind. Debates tend to focus on selection of or choice of methodologies and interpretation of study results. From the outset of the Cataract consultation, agencies and the applicant agreed to study fish passage. The more intense discussions came later, when decisions were made about how to provide fish passage and how to monitor the results.

Ashton-St. Anthony

The Ashton-St. Anthony project is located on the Henry's Fork of the Snake River in eastern Idaho.

The original license was issued in 1977 with an effective date of January 1938. The renewal license was issued in August of 1987, effective January 1, 1988. Included in the license were five articles (Articles 401-405) pertaining to fish passage, fishery and wildlife enhancement, and turbine mortality. Thus, most of the substantive negotiations associated with this project took place after the license was issued. Because only general agreements on each of these issues were reached before the application was submitted, the post-license negotiations were protracted and difficult.

The shape of this consultation was determined by FERC's procedures before the passage of ECPA. Currently, parties are urged to reach agreement before submitting the application. If they are unable to agree, FERC makes a decision on unresolved issues, rather than presenting the parties with a list of items to resolve.

The negotiations associated with re-licensing the Ashton-St. Anthony project were minimally successful. When parties were asked to rate the agreement on our ten-point scale, the range was three to eight with an average of 5.5. Respondents qualified their responses with the reminder that only parts of the agreement had been finalized. The most influential factor in determining the level of success of this negotiation is that when the interviews were conducted, nine years after license issuance, no final agreement had been reached.

Participants' ratings of the clarity of technical issues varied widely and changed throughout the course of the consultation. Early in the process, more than one applicant intended to file an application to build a project on the site. Thus, the successful applicant attempted to eliminate potential roadblocks by simplifying the technical issues. Later, as competition for the site diminished and it became apparent that the project would move forward, disagreement on technical issues intensified. At this point, the parties negotiated about what studies to conduct but neglected discussions of interpreting study results. Thus, technical issues were clear only to the extent that parties agreed on what to study.

Early in the consultation, the state resource agency defined the issues to be addressed. First, the agency stated that historic flow releases from the project should not be altered by agreements in the new license. Second, because 3.5 miles of free flowing riverine habitat had been inundated by the Ashton development, mitigation was needed for lost wildlife benefits. Third, fishery production was much lower in the Ashton Reservoir than in nearby impoundments, and studies were necessary to determine how to make the reservoir more productive. Fourth, there was concern over raptor protection on powerlines. Finally, fish passage at the St. Anthony dam and screens to prevent entrainment at the Egin Canal were requested.

In October of 1984, the utility responded with the following proposals: (1) fencing along eight miles of utility-owned property to prevent grazing by cattle, and experimental planting to restore a riparian zone; (2) construction of goose nesting structures; (3) construction of raptor perches and Osprey nesting sites; (4) preservation easements on an emergent wetlands complex near the development; and (5) monitoring through inspection visits and supervision by a qualified biologist. Fish passage and fish screening were not mentioned. Two months later, the application was filed with the FERC.

The following April, the utility and the state resource agency agreed that the utility would fund a two-year study of Ashton Reservoir to evaluate the existing aquatic resources, introduce several species of cutthroat trout, and monitor the survival and catch rate of the introduced species. According to representatives of the applicant, part of the agreement was that after joint review of study results, conclusions would be forwarded to FERC in the form of recommendations. However, after one meeting in which the state resource agency presented preliminary findings, a study report was sent directly to the FERC by the resource agency. The applicant did not agree with the report's conclusions and was unhappy that species other than cutthroat trout were studied. These actions were taken by the applicant as signs of bad faith.

In May of 1985, the project received Section 401 certification from the state of Idaho. In 1986, the Environmental Assessment (EA) for the project was completed. The EA recommended several measures for mitigation of fish and wildlife impacts, including fish passage and fish screening. The assessment concluded that project construction and operation would not contribute to adverse cumulative impacts in the Henry's Fork River Basin and recommended relicensing the project.

During the period from early 1986 through mid-1987, the applicant and the agencies attempted to reach agreement on how to address the technical issues. A recurring issue was that of fish entrainment. The resource agencies suggested screening the St. Anthony development to prevent entrainment, while the applicant argued for the alternative of replacing lost wild fish with hatchery fish. At the heart of this disagreement was the belief of the utility that few fish actually inhabited the canal. Another unresolved issue was fish passage. The resource agencies stated a need for fish passage over the diversion dam. The applicant balked at this proposal on the grounds that few fish would utilize the fish passage facility. The arguments at this point centered on the

fact that little biological data had actually been collected. The utility was reluctant to commit to major expenditures without data showing that many fish would benefit from project modifications.

When the application was submitted to the FERC, it reflected the various areas of disagreement. When the license was issued in August 1987, FERC included five articles pertaining to environmental mitigation, and they reflected each disagreement. The applicant and the resource agencies were charged with resolution of conditions contained in the license articles. A new round of negotiations commenced and had not concluded at the time of our interviews.

Throughout these consultations, applicants and resource agencies disagreed about appropriate mitigation. One reason for this was lack of agreement on the proper use of various techniques and methodologies. From the beginning of the process, the state resource agencies expressed concern about the loss of wild fish due to entrainment and turbine mortality. When an attempt was made to quantify potential losses, each group arrived at different conclusions about fish mortality. In addition to that problem, there appeared to be very different views on the value of wild fish versus hatchery fish. In the opinion of some resource agency representatives, the applicant seemed to believe that (1) the fish were there to be caught, and (2) there is no qualitative difference between catching a wild fish and catching a hatchery fish. Resource agency personnel believed that the wild fish population was intrinsically valuable and worth preserving. Indeed, the resource agencies believed that the utility ought to be required to mitigate for past damages and make some attempt to return the fishery to preproject conditions, but this request was never made explicit.

Another problem became apparent when designing studies for evaluating the effectiveness of a fish passage window in the diversion dam. The applicant's consultants planned on using hydro-acoustics to detect fish passing through the dam. The resource agencies warned the applicant that in the particular situation, the solid wall of the dam would result in blind spots. Undeterred, the consultants proceeded with plans for hydroacoustic monitoring, only to find that the plan failed – because of blind spots. Eventually, these problems were overcome and a permanent fish passage facility was constructed.

ANALYSIS AND DISCUSSION

Of the four consultations analyzed, one (Koma Kulshan) was rated as fully successful, and three (Oswegatchie, Cataract, and Ashton-St.Anthony) were rated as minimally successful. The Koma Kulshan case exhibited the highest level of technical clarity.

Technical Clarity Enhanced by Simple Project Design

The most obvious reason for Koma Kulshan's technical clarity was that the engineering design was not complex and only moderate environmental impacts were expected. Project operations posed certain problems, but for most of the potential drawbacks a mutually acceptable solution was available. For example, one concern was possible erosion in the case of a penstock rupture. The solution: the penstock was routed over a lava field with low erosion potential. This problem-solving approach characterized the Koma Kulshan negotiations.

This is not to say that parties had no disagreements over technical issues. Throughout the negotiations there was some distrust between resource agencies and the applicant. This stemmed from a belief held by all parties that their form of expertise was most appropriate in solving problems. The applicant questioned the ability of the resource agencies to interpret engineering designs, and the resource agencies held fast to the notion that their interpretation of biological studies was the only valid one. Despite these differences, there was consensus about the actual scope of the issues to be addressed; sometimes parties disagreed on how to study the problems or even how to interpret the studies but agreed on the validity of the issues themselves. Because of a generally cooperative atmosphere and a desire on the part of all participants to finalize the negotiations, disagreements on methodology and interpretation were resolved.

Technical Clarity Enhanced in New Projects

The Koma Kulshan project was the only new project we studied. Each of the other projects involved an application for a renewal license for an existing project. At first glance, it might appear that renewing a license would be less complicated than starting from the ground with a new project. In fact, the Koma Kulshan process required about as much time to resolve as the other cases, ten years. Nonetheless, some interesting dynamics added to the complexity of relicensing. In the Koma Kulshan case, the potential impacts were believed to be minor. To verify this, the parties conducted studies and assessed the project area's biological resources. Because no concrete had actually been poured, the applicant had the flexibility to work around problems that were identified.

This sort of pre-construction data collection never occurred with the projects applying for renewal licenses. Thus, agencies and applicants could only speculate about pre-project conditions. Some resource agencies representatives commented that they viewed the relicense process as an opportunity to mitigate for past losses. A resource agency representative for one of the projects stated:

> I quickly adopted the philosophy that the reservoir had never been mitigated, or it was a non-functional fishery supported totally by catchables. The catch rate was extremely low relative to what the river would have provided...They [the utility] had an obligation to mitigate for that fishery... [We] looked at that historical information on catch rates in the river above and below there, and concluded that the mitigation goals should be equivalent to the fishery in the river, that was provided by the natural fish.

This is where many disagreements about the proper boundaries of the technical issues arose. Resource agencies believed it reasonable to attempt to restore to, or mitigate for, lost historic resource conditions. Applicants tended to take the view that license negotiations should be limited to protection of existing resources. Lack of understanding was often amplified by the fact that these two positions were never explicitly expressed, leading each party to conclude that the other was unreasonable.

The Effect of the Changing Rules of Hydropower Licensing

The Electrical Consumer's Protection Act of 1986 (ECPA) amended the Federal Power Act of 1920 (16 U.S.C. 791-828c) and changed the rules of hydropower licensing by placing greater emphasis on balancing the need for power generation with environmental protection. This effectively broadened the scope of legitimate technical issues in FERC licensing consultations. Because of this, resource protection agencies are able to pursue their goals with more persistence than in the past. The rules of ECPA require FERC to give "equal consideration" to power and non-power benefits, and this means that project applicants and resource agencies are bound to gather and present whatever data they deem necessary for the FERC to make a balanced decision. As more projects pass through the licensing process under ECPA, it might be expected that some consensus will be reached as to what is included under "equal consideration" and what technical issues must be addressed to ensure that parties are in compliance with ECPA, but in these cases there was no such consensus.

Although formally concluded after passage of ECPA, the negotiations for Koma Kulshan were essentially completed before passage of the Act. Federal and state resource agencies participated in the consultation process in accordance with the Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661 et seq.). The FERC conducted an Environmental Assessment for the project, as required by the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321-4370). Using these familiar avenues for project consultations, parties were cast in comfortable and well-understood roles. The rules were known, and how issues would be addressed was well-defined. Not only were the issues somewhat simple, but also there was little disagreement over what they were because the process that had defined them in the past was still in place.

Each of the other projects was affected by passage of ECPA. In the Cataract case, active consultations were forced to change track when ECPA's rules took effect. The applicant submitted an application to FERC, which was returned with a request for additional resource agency input. The other two cases, Oswegatchie and Ashton-St.Anthony, began consultations before ECPA, but the Act came into effect during the proceedings. Although participants were not questioned about the effect of procedural requirements, it appears that the need to comply with ECPA may well have created an atmosphere of uncertainty about what technical issues were properly addressed. One resource agency representative reflected on this:

> [I]t was one of the first relicensings under that new set of rules, and we were really trying to figure out how we're going to respond. And a lot of what happened here is how we have handled future relicensing activities.

The Importance of Precise Definitions

In several consultations, problems in achieving technical clarity arose because parties were unclear about the definition of the problem. For example, in the early stages of the Koma Kulshan negotiations, resource agencies requested a cumulative impact assessment, without specifying what would be included in such an assessment. Only after lengthy discussions did it become clear that the issue of concern was sedimentation due to project operations. Once this was identified, appropriate studies were agreed to and the problem was resolved. Because the negotiations were generally cooperative and all parties wished for an expedient resolution, participants were

willing to engage in the work of defining the technical issues. In the absence of this willingness, it is not difficult to imagine frustrating and fruitless negotiations leading to a series of studies that fail to provide the necessary information. This was the case in the Ashton-St. Anthony consultations, where studies of Ashton Reservoir were conducted without prior agreement on a precise definition of the problem and fish passage studies were conducted in the face of disagreement over proper methods. As a result, resource agencies and the applicant had different expectations and never agreed on study results.

Maintaining Technical Clarity When Issues Change

A natural progression of these consultations was that as the effects of the proposed project become clearer, the technical issues changed. This was exemplified in Koma Kulshan. As the project design emerged, the effects of the project became more tangible. Participants believed that these changes were a natural and inevitable function of increased information.

However, changing the scope of the technical issues is not always so readily accommodated. In Cataract, new issues were introduced as project impacts became more apparent. Up to a point, this created no intractable problems, but when the state opened the issue of requiring the utility to provide flows for waste assimilation, the consultations broke down. The utility did not argue that the technical issue was invalid, only that it was not properly addressed within the FERC consultation process. Moreover, the utility viewed the state's action as an unfair attempt to introduce a new issue at the eleventh hour and to bypass the negotiation process. Interestingly, the applicant pointed to this episode as one that dramatically decreased the level of technical clarity, while the state resource agency representative stated that it greatly enhanced technical clarity.

Other issues in the Cataract project were raised and then dropped during the process. For example, discussions of comprehensive river planning were discontinued because the applicant had recently had an unsuccessful experience with a comprehensive plan in another river system. Because the issue had not been resolved and was dropped without consensus, some participants believed that the negotiation was a failure because it did not resolve a key issue. The key to maintaining technical clarity when the issues change is to share information and reach consensus about adding or deleting issues from the negotiation.

Describing a Problem Versus Crafting a Solution

A common pattern was that parties reached agreement on problem definition and accepted most new technical issues as they arose. After agreeing on these issues, however,it often became problematic to define appropriate studies. If studies were defined, interpretation of study results – and making decisions about what actions to take based on those interpretations – sometimes led to lengthy disagreements. Even in Koma Kulshan, general agreement on the scope of the technical issues did not translate into easy agreements on how to study the problems. Although they agreed on the need to conduct a study of the fishery, resource agencies and applicants disagreed on methodologies and target species.

Negotiators in the Oswegatchie license consultations agreed that the consultations were single-issue, focusing on flows in bypass and downstream reaches, but agreement was not achieved for flows in each of these stretches. Participants speculated that lack of agreement on appropriate study design, the inability to reach consensus on study interpretations, and differing goals all contributed to the lack of success in defining technical issues and, ultimately, in reaching a satisfactory agreement.

During the Cataract consultations, all parties agreed to study fish passage. Respondents verified that this was broadly accepted as a legitimate technical issue. They then went on to describe the difficulty of making decisions about how to provide fish passage and how to monitor the results. During the Ashton-St.Anthony negotiations, resource agencies and the applicant bitterly disagreed about whether fish passage was an issue. The applicant contested resource agency studies that indicated the need for fish passage. Once fish passage was made possible by removing boards from the diversion dam, the resource agencies questioned the validity of the technique chosen by the applicant to study the effectiveness of the solution.

The Ashton Reservoir study was another example of a study conducted without clear understanding of how the results would be applied. The applicant considered the study an avenue for evaluating the potential for a cutthroat trout fishery, while the resource agencies viewed it as an opportunity for determining which fish species might do well in the reservoir. When asked what factors stood in the way of reaching an agreement, one resource agency representative commented:

> I think lack of consensus on what the information said. Doubt on [the utilities'] part that this data was representative of what was going on

> here. Which is probably trust in our ability to do it. Our insistence on the right of the state to set management goals, exclusive of their desires. That's a [Fish and Game] Commission responsibility, and no one else has that authority and responsibility. And their insistence that our goals were not realistic, based on their perspective...That was major.

Even when applicants and resource agencies believed they agreed on the scope of the technical issues, the agreement was not enough to ensure success.

Is Technical Clarity Related to a Sense of Urgency to Reach Agreement?

Clarity of technical issues is but one factor thought to be necessary for success in negotiation. Another variable we investigated was "urgency to reach agreement." As with each of the variables, a series of questions was asked of each respondent to evaluate the level of urgency to complete the consultation. The Koma Kulshan case was the only one in which urgency was reported. It was also the only successful negotiation and the only case in which the technical issues were clear.

During the Koma Kulshan licensing consultations, participants reported a sense of urgency for several reasons. The applicant reported urgency because the utility could not generate power and produce revenues until the project was operating. This provided an incentive to maintain momentum in the negotiations. Endless haggling over technical issues would not serve the interests of the applicant. For the resource agencies, no compelling reasons existed to stall the project. Given scarce resources and limited personnel, it was in the agencies' best interests to finalize the negotiations once it became clear that the process would eventually move to a conclusion. Completely different dynamics were at work in the other cases.

A very obvious difference was that all of the other projects were already operating. Any project retrofitting required of the utilities would cost the project operators money, in terms of capital expense and, perhaps, reduced generating capacity. It was in the best interests of the utilities to dig in their heels over the technical issues. Even if additional costs were not completely avoided, they could at least be delayed or minimized. In the Ashton-St. Anthony project the license was issued with a number of articles requiring further investigations. Although the utility and the resource agencies were directed to come to agreement, the agencies viewed the project as being of low priority and the utility was able to generate power whether or not agreement was reached. Each party had very few incentives to bring the negotiations to a conclusion. There was no indication in any of these cases that anyone deliberately muddied the issues in order to stall resolution. However, in the three less successful cases, there appeared to be a general lack of motivation to pin down and resolve technical issues.

The Importance of "Good Faith" in Negotiation

Another factor that seemed instrumental in determining the eventual outcome of these negotiations was the parties' perception of fairness and good-faith bargaining. In Koma Kulshan, disputes were relatively easy to resolve because each party came to believe that others acted in good faith. Disagreements about technical issues were discussed until resolution was reached. There was a realization that different groups were working toward different goals, but a general level of tolerance was apparent. The other cases illustrate that this is not always true.

Despite the fact that all parties in every case indicated that they would negotiate with the same group of people in the future, technical issues were approached in ways that alienated some and led to a perception of unfairness.

Several incidents typified this phenomenon. During the Cataract consultations, the parties agreed to design a river-wide fish passage plan, which would become part of the FERC license. It was thought that the difficulty of designing such a plan would be offset by time saved in future consultations. After more than a year of discussion, the applicant decided to forego comprehensive river planning, largely because of the failure of a similar plan on the Kennebec River. Resource agencies believed that this action constituted backing down from a previous commitment. The problem was probably intensified by the manner in which the applicant proceeded. From the record, it appears that rather than re-opening the discussions of comprehensive river planning, the applicant simply submitted a document to FERC that agreed to fish passage for the Cataract project but eliminated river-wide planning from the Cataract license. The resource agencies felt that a technical issue was withdrawn from consideration without due process.

The problem of the 401 certification for the Cataract project began during the time when comprehensive river planning was being discussed. After the comment period for the license application expired, the state environmental protection agency realized that no 401 certificate was in place below Cataract dam. The agency attempted to intervene in the process at that point and was eventually successful. While all parties agreed that some arrangement was

necessary to ensure adequate flows for waste assimilation below the dam, the applicant's position was that introducing the 401 issue at such a late stage in the process was unreasonable. In any event, the applicant had signed an agreement with the waste dischargers to provide adequate flows for assimilation. Coupled with the applicant's unwillingness to consider comprehensive river planning, this episode intensified feelings of mutual distrust and led all parties to question the good faith of other participants.

The Ashton-St. Anthony consultations were also marked by perceptions of lack of good faith. Much of this was caused by a failure to agree on the scope and implications of technical issues. The Ashton Reservoir study was a prime example of this. Problems arose because the resource agencies and the applicant agreed to study the reservoir but did not discuss implications of the study. One respondent stated:

> As far as you now have a reservoir fishery instead of a riverine fishery, that's an issue. That's defined. That's agreed to. What the significance of that, or what the appropriate mitigation is for that action, was never defined nor clearly identified.

Because of the lack of clear study goals, the resource agencies and the applicant were unable to arrive at a common interpretation of the study. The state resource agency submitted its interpretation to FERC, and the applicant felt this violated a previous agreement to present FERC with a jointly-prepared document. For the remaining years of the consultation, the applicant routinely questioned the validity of all studies performed by the resource agencies. Perhaps the initial breakdown in trust produced a situation in which parties were unwilling to accept anything at face value. Therefore, all studies were suspect, and technical clarity became ever more elusive.

The Effect of Personnel Turnover

The FERC licensing consultations that we studied spanned fairly long periods of time – nine years, on average. Typically, the players changed through the course of the negotiations. The negative effects of these changes were clear: agreements changed when personnel changed; the process was slowed because new players had to be brought up to speed; no parties felt "ownership" in the process. As negotiations dragged on for several years, the sense of urgency to complete the process disappeared. Some projects became very low priorities.

Changes in personnel did not always produce negative effects. In some cases, the changes were fortuitous in that personality conflicts were eliminated or that a new participant brought essential skills or expertise. In Ashton-St. Anthony, organizational changes in the state resource agency and the power company resulted in increased willingness to renew earnest negotiations. One manifestation of this was a determined effort to sort out and agree on the technical aspects of the remaining problems.

CONCLUSIONS

Our investigation of factors affecting success in FERC licensing consultations leads to the observation that technical clarity is critical for successful negotiations. In each case, the degree of clarity of the technical issues seemed directly related to the level of success of the negotiation. In many ways this is not surprising. The consultations on FERC projects revolve around reaching agreement on project operations and mitigation for wildlife resources. These are technical issues. If they are intractable, the level of conflict is likely to increase, and the likelihood of success decreases. Technical issues may be intractable because of fundamental, rather than technical, differences between parties.

The research design for this project required that respondents be queried about whether technical issues were clearly defined. In analyzing their responses, it became obvious that these questions were answered on more than one level. On one level, interviewers were told whether or not parties had actually agreed on the scope and definition of issues. Typically, respondents answered the question by naming issues and discussing the general level of agreement on whether the issues were considered legitimate.

The next level was that of agreement on how to study the problem, how to interpret study results, and what actions to take based on those results. In many instances, parties found it fairly straightforward to name the issues. When it became necessary to move to the next level – study, analysis and interpretation, and decision making – differences in goals became apparent. In some cases, parties agreed on what studies to perform but failed to discuss interpretation and implications of the studies. Because negotiations are often stalled by an inability to reach agreement on questions of "how," close attention should be paid to avoiding these pitfalls when planning a negotiation.

One strategy which could contribute to more effective negotiations is joint fact-finding before negotiations begin (Ozawa and Susskind, 1985; Susskind

et al., 1987; Clark *et al.*, 1991). This implies a substantial time commitment, since all parties are required to participate in defining issues, evaluating methodologies, and determining the implications of various scenarios. The drawbacks to this process of pre-negotiation planning are clear. The time requirement is problematic, especially when this part of the negotiation process is often viewed as non-productive. Related to this is that the consultation process entails rigid time frames, often making it difficult for parties to find the time to accommodate fact-finding, which can become a negotiation in itself. The alternative, however, is that technical issues will be introduced throughout the course of the negotiation, agreement will be difficult to reach, and the consultations may drag on for several years.

Our study seems to verify that successful negotiations are associated with clarity of technical issues. Those involved in natural resource negotiations should consider the importance of dedicating time and resources to clarifying not only the scope of technical issues but also appropriate studies and plans of action. Taking this difficult but necessary first step may lead to more successful outcomes.

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