

Reviewer Report on Fish Passage Program Review

Reviewer #4

June 8, 2018

Introduction

The seven review questions posed to the review panel by NOAA Fisheries are summarized below under seven key words: mission, integration, watershed, coordination, effectiveness, balance, and engagement. I've identified a few areas for NOAA Fisheries consideration under each of these seven themes, headlined in capital letters. Discussion of strengths, challenges and recommendations are integrated within each of these areas. A bullet format is used to facilitate reading and allow the main points to stand out. Many of the headlines I call out do not fall neatly into one of the seven themes, and may overlap to other areas.

This review report largely expands upon observations and comments I made during the panel sessions, concentrating on organizational strategy and policy in relation to hydro regulation, watershed approaches, and NOAA Fisheries program opportunities. My background and experience is not directly in fisheries science and fish passage engineering, but in hydropower licensing and regulation, and in NEPA review and permitting of large water and energy infrastructure (within which fisheries resources and regulation almost always necessarily commands attention, leaving me with a deep appreciation of the field). Fisheries science is strongly represented on the review panel, and I leave the technical aspects of the NOAA Fisheries programs regarding prioritization and monitoring of restoration sites, recovery goals and approaches, etc. to the panelists who bring a technical fisheries background.

Observations and Recommendations

1. *Mission: Where are NOAA Fisheries programs excelling in achieving goals to conserve habitat and increase access? What more could be done to achieve this goal?*

THESE ARE OUTSTANDING PROGRAMS

- The cumulative weight of program review presentations, combined with the background materials provided to the panel convinces me that NOAA Fisheries professionals are doing great things – and that they are knowledgeable, experienced, and thoughtful.
 - It is clear that the Hydropower and Community-based Restoration Program (CRP) are well-conceived, well-managed, well-organized programs, with strong goals and performance, conducted by dedicated people who are exceptional professionals, and who have achieved some truly remarkable outcomes (e.g., settlements in the Klamath and Yuba river basins).
 - This is not to say that there are not many good ideas that will surface in this review to make what's good even better.

- However, if the purpose of this review is something larger than to confirm the successes you have had, what is that “something larger”?

WHAT ARE YOUR ASPIRATIONS AND HOW ARE THEY BEING FULFILLED (OR NOT)

- I had expected that, in the course of these presentations and discussion, NOAA Fisheries staff would bring forward aspirational goals for the better integration of the two programs. For example, addressing how they would like to see the two programs expand and interact to achieve goals, establish a broader institutional reach in meeting NOAA Fisheries’ fundamental mission, and develop a better synergy between the programs. While we heard a great deal about what NOAA Fisheries is doing, we did not hear as much about what NOAA Fisheries would like to become, or where its staff see opportunities to improve their interaction or integration. Rather, we heard the very detailed (and convincing) presentations of current program achievements.
- It seems likely that the experience of creating and presenting this review has been a valuable experience for all the NOAA Fisheries staff involved, and may have raised these questions in their minds, even if not explicitly addressed to the panel. I hope that NOAA Fisheries will capitalize on this review experience internally to follow up and extend discussion on the questions and ideas that will have been brought to mind among NOAA Fisheries’ many unique and talented people.
 - What’s the next set of accomplishments to bank? What is the next bar to surpass?
 - NOAA Fisheries 20 years ago didn’t look like it does now, didn’t do many things that it does now – that difference is the legacy of the present generation of doers and leaders – what’s the next legacy going to be?
 - What concrete benefits to the resource are you looking for in coordinating the hydro and CRP programs – what synergies and empowerments do you want to add to NOAA Fisheries as an agency and in the future development of your programs? What are the opportunities that YOU see?
 - What are you striving to *become*? What do you want to add to your institutional functionality, leverage scarce resources, extend your reach, and get to new/higher level goals? The issue may be not so much what’s not working as how much more you could be. What inspires you?

CLIMATE CHANGE

- It was stated that FERC is rejecting climate study requests from NOAA Fisheries even when hydro owners offer them. These are difficult times for public agencies to engage in research on climate change or to present urgent needs for resource management related to expected climate change impacts. It takes a level of professional bravery and requires a strategy to protect the credibility of the climate analyses that are put forward.
- NOAA Fisheries scientists are clearly aware of the dynamic, interactive and multi-faceted ways in which climate change effects may play out upon the baseline environment (e.g., the hydrologic cycle, instream flows – especially timing, etc.) and the ultimate danger posed to the resources which NOAA Fisheries is tasked with managing and protecting.
 - The CRP program needs to consider how its specific objectives and implementation projects may be affected and compromised in the long run by climate change effects, and develop a specific, programmatic strategy to

adaptively manage not just individual projects, but the program as a whole in response to what may become a very fast-moving series of changes in the environmental baseline.

- The Hydro program needs to incorporate climate change strategy and specific regulatory proposals (including a review of potential new language to include routinely in PM&Es and in your reservation of authority). This could be incorporated in the overall FERC strategy discussed below.

2. Integration: How can NOAA Fisheries better integrate hydropower regulatory requirements and timelines with voluntary habitat restoration opportunities into a strategy for addressing highest priority barriers?

HYDRO REGULATORY REQUIREMENTS & TIMELINES

- NOAA Fisheries staff appear to be well aware of hydro regulatory standards and well-equipped and ready to participate in the regulatory process.
- A “better integration” of voluntary habitat restoration opportunities in addressing high-priority barriers will be either opportunistic or strategic:

OPPORTUNISTIC VS. STRATEGIC APPROACHES

- Opportunistic approaches do not lend themselves well to a programmatic approach, beyond a general commitment to encouraging an exploratory attitude. An opportunistic approach should allow the latitude to respond as circumstances allow, project by project, depending upon the unique constellation of stakeholders, personalities, pressures, baseline environmental conditions, and restoration opportunities that present themselves in each watershed.
- The comment was made that major watershed interventions (such as occurred on the Klamath or Yuba) are “inevitably opportunistic” and that “they come to us”. That has undoubtedly been the case, but begs the question, what strategy could enable NOAA Fisheries to move beyond opportunism? There are opportunities to proactively take the lead (and it sounds like this is in fact what NOAA Fisheries leaders have done in places like the Klamath and Yuba), and there is an opportunity to proactively develop an overall strategy that targets specific watersheds and groups of hydro projects.
- Keith Kirkendall commented: “the precedent-setting projects are always the small projects. They don’t have deep pockets. They have to develop solutions.” Each of these intractable situations opens a window for NOAA Fisheries to bring to bear its expertise, while leveraging habitat restoration within the context of seeking overall workable solutions. From the case studies presented, it appears to me that NOAA Fisheries staff are doing just that, and should be encouraged to (1) expand and continue their creative and innovative problem-solving; and (2) extend these efforts into agency strategy as part of integrating these two programs.
- Even the big hydro projects never planned to spend the kind of money that was eventually put on the table in the Klamath or the Yuba, but the prospect of unending controversy and resource damage led to the recognition that it would be better to stop the bleeding even at the cost of the major financing that solutions would require. While NOAA Fisheries should continue to seize opportunities to proactively lead in seeking overall workable solutions, those who are seizing leadership opportunities should be

provided with the staff resources and support to be fully effective wherever they are taking on these extremely challenging situations.

PRIORITIZATION

- NOAA Fisheries technical/scientific justifications for their prioritization schemes appear to be sound, but I leave detailed technical critique to other panel members.
- Prioritization needs to be dynamic. Any list of identified priorities represents a moment in time, developed from present baseline environmental conditions, restoration opportunities, and the status and urgency of affected fish populations. What is a priority today may be affected tomorrow by actions in basins, both planned and unplanned, that shift urgency and needs due to the resulting impacts, development (and even recovery). One can never say, “prioritization is completed”.
- Prioritization should be placed in the context of agency strategy, organization, program coordination, and overall objectives, which should set the overall framework within which priorities can be identified and ranked.
- Prioritization should consider how prioritized projects would fit within an overall watershed-scale approach to hydro licensing and restoration. Of course, a watershed hydro opportunity cannot guide prioritization until it is known that a viable watershed relicensing plan has been agreed upon for a group of hydro projects in a particular location. NOAA Fisheries’ present strategy focuses on hydro projects one by one, opportunistically, as driven by the relicensing schedule.
- I recommend that NOAA Fisheries develop a true watershed-scale hydro program strategy outside of the immediate imperatives for any particular relicensing or the particular priorities restoration or passage needs within a given region (urgent as they may be), based on the ability to bring together for licensing hydro projects in target watersheds. This is discussed further below.

3. Watershed: How can NOAA Fisheries better incorporate a “watershed” approach into high priority fish passage habitat restoration?

FOCUS NEEDS TO BE HYDRO AS WELL AS FISH

- There is a well-known Sufi tale of the Mullah Nasrudin, who is discovered by his students, down on his hands and knees in the dark, searching for his lost door-key under a streetlight. They immediately get down with him to help him search. After a long, fruitless search one asks, “where did you drop it?” “Over there” he says, indicating a dark area out of the pool of light. “Well then why are we looking over here?” There is more light here” he answers. Like Nasrudin, NOAA Fisheries experts are looking where there is “more light” – for them. That is, they are looking at the watershed program in terms of their fishery expertise and creating detailed programs for fish, without a balancing focus on how it works for hydro owners. The key may not be found until fishery imperatives are merged with hydro owner’s imperatives in licensing.
- At a watershed scale, one expects to be working from a multi-disciplinary, multi-issue, multi-resource perspective. This immediately raises the question, is fish passage too narrow a scope? Or does it need to be that narrow to be effective? I suggest that a watershed approach cannot be effectively incorporated unless the focus is raised to consider the full suite of habitat improvements that could be offered in hydro licensing

(e.g., gravel augmentation, side channel development etc.), particularly where an entire watershed may be brought into overall management planning, and not just the simple measure of miles opened above a previous barrier.

WATERSHED APPROACHES

- A national program for hydro regulatory strategic policy development and leadership is recommended to raise NOAA Fisheries' view above the opportunistic project-by-project level. This will require direct interaction with the hydro industry and collaboration on new legislation and regulatory policy. The hydro industry can be expected to be open to an such an initiative to the degree that it comes framed as a collaborative problem-solving effort that strives to meet the needs of both the resource and the industry. There has been an impressive emphasis on low-impact hydro and the recognition and support of "green" environmental values in the industry. Awards have been created and typically a half dozen or more projects are now recognized every year at the annual NHA conference for their outstanding stewardship of the environment. At the same time, the industry has been extraordinarily effective (as compared to other renewables) at organizing near-unanimous bi-partisan support for legislation to reform and improve hydro regulation. This is a good time to engage the industry in a forward-looking effort to continue regulatory reform in the direction of watershed scale management of hydro, to act on the industry's stated environmental values, and to seek "overall workable solutions" that provide benefits on all sides. Key points of contact include the National Hydro Association leadership and those who are striving to be leading utilities and municipalities, such as Pacific Gas & Electric Company and Seattle City Light, to name only two known to me.
- In recommending a national initiative for a watershed-scale approach to program, it should be recognized that NOAA Fisheries has conceptualized watershed approaches and has dedicated staff to encouraging them. However, the program has been limited by a regionally-based, project-by-project approach. To truly seize the opportunity and realize the benefits to NOAA Fisheries' mission and objectives of implementing a watershed approach to hydro, a national scale strategy will be needed, as opposed to engaging in hydro relicensing on a project-by-project basis.
- This is consistent with presentations NOAA Fisheries has made on Pursuing A Watershed Approach to Hydropower Project Relicensing, dating back to 2014. In these presentations, NOAA Fisheries has identified the problems with a project-by-project approach, such as piecemeal restoration and additional effort required. Similarly, NOAA Fisheries has identified benefits for the resource of a watershed approach, including coordinated improvements to fish passage and habitat, and a watershed-wide scope. It is also consistent with the recent Department of Energy Hydro Vision Report, with which NOAA Fisheries collaborated in developing statements on the watershed approach and sustainable hydropower development.
- Developing and implementing such a strategy would need to occur on its own schedule, not tied to a particular project's relicensing schedule. NOAA Fisheries should allow 3-5 years to develop, negotiate and bring to Congress such a program. This program would need to be coordinated and collaboratively developed with key hydro owners, the National Hydro Association, FERC, the Corps of Engineers, and the Bureau of Reclamation. (The Corps and Reclamation manage major dams, particularly in the West, even though they are exempt from the FERC licensing process.)

- One of the few bipartisan agreements that has been possible in recent Congresses has been improvements to hydro regulation. This is the time when a watershed scale framework that provides the regulatory tools to implement basin-scale treatment of hydro projects in any watershed could pass, *IF it is framed as a proactive, positive solution that has been negotiated with and is supported by the hydro industry* because it provides the benefits and offsets that owners need in order to make the sacrifices that will be required to bring their projects to the table to license in one coordinated watershed scheme. This is not the place to go into details, but the primary problem that will need to be solved will be to bring the target hydro projects in a watershed into alignment for licensing, which may require that some project licensing are extended and others are brought back into a watershed-based relicensing program much sooner than they otherwise would be required to relicense on their own. A great deal of creative thinking and innovative proposals has already been put forward over the past 5 years in panels and presentations at conferences such as National Hydro Association, NW Hydro Association, HydroVision, and the Society for Human Ecology, and in the US Department of Energy Hydro Vision Report, which serve as a basis for envisioning a watershed-based hydro licensing process.
- Comprehensive plans and Settlement Agreements were presented to the panel as primary watershed approaches, and it was acknowledged that these are complimentary, not mutually exclusive approaches. Settlement Agreements can occur within the framework of hydro licensing, and they open the ability to bring in elements of solutions that are not strictly available within the licensing processes. A watershed framework should make use of both these tools, emphasizing the nexus between them and the hydro projects undergoing licensing in the watershed.
- The Klamath Basin and Yuba River case studies should be closely examined (together with other prominent multi-stakeholder processes and basin-specific experiences, such as Washington watershed planning, the Deschutes, Penobscot, etc.) in developing a strategy for framing a watershed-scale regulatory approach that can be presented to and negotiated with the hydro industry and FERC, and ultimately presented to Congress. The regulatory framework should be developed jointly with NHA and the industry, and brought to FERC for review and to ground-truth the regulatory mechanics and feasibility of the draft proposal. It should go to Congress with united support.
- NOAA Fisheries needs to begin involving younger staff on the ground with leaders like Steve Edmonson as major settlements of hydro projects emerge going forward, such as NOAA Fisheries undertook in the Klamath or Yuba, facilitating full multi-stakeholder teams to work on multi-disciplinary issues and develop overall workable solutions. NOAA Fisheries' younger staff need to be exposed to these processes and learn strategy and practice, to be ready to step and continue the legacy that has been built.

NATIONAL PROGRAM LEADERSHIP FOR A WATERSHED-BASED HYDRO PROGRAM

- Within NOAA Fisheries, such a program would need to be given leadership authority to guide and integrate participation in hydro licensing that occurs at the regional scale. Again, past presentations by NOAA Fisheries have recognized and begun to conceptualize potential benefits to the hydro industry of a watershed approach. To succeed, outreach and collaboration with industry will need to be carried a step further. A national program should proactively recognize and support appropriate legislative and regulatory measures that create a framework for watershed-scale hydro licensing. The

details of such an initiative need not be developed here, but proposals should be developed internally at NOAA Fisheries, and externally in close collaboration with agencies and industry. On the NOAA Fisheries side such a program should be led by senior staff who bring both science and regulatory expertise. Ideally, a leadership team would include a strong advocate for the resource who brings intimate knowledge of NOAA Fisheries, fish passage, habitat and restoration, and, on the industry-facing side, someone who is very experienced in hydro licensing, who is active and recognized in the industry, who brings a very substantial hydro licensing resume, and who is well-known and respected in the hydro industry (e.g., at NHA). This team should be tasked with developing a proactive hydro watershed-scale regulatory strategy in collaboration with FERC and the hydro industry, and helping craft implementing legislation that can be sponsored in Congress.

- NOAA Fisheries' current approach assigns a hydro coordinator in the national office, with whom regional offices voluntarily coordinate as they make choices at the regional level to opportunistically participate in large-scale watershed solution processes tied to hydro licensing as they emerge. The criteria that are used at the regional level to participate are not clear, and it appears that this approach creates a weak link between national guidance and regional implementation. It does not proactively develop and advocate for an overall solution to hydro licensing on a watershed basis as the most effective means to achieve NOAA Fisheries' mission and protect and improve the resources that fall under the agency's jurisdiction. It does not empower the national coordinator with anything more than voluntary cooperation from regions or a portfolio to seek effective regulatory solutions in new legislation.
- To execute the recommended national watershed strategy, NOAA Fisheries leaders would need to be much more in evidence at NHA, to raise visibility of the agency's mission and goals, gain recognition of the need and legitimacy for watershed-scale solutions, build support, and bring a consensus solution to Congress. To succeed, NOAA Fisheries would need to participate more actively than by simple attendance at the NHA annual conference.
- The NOAA Fisheries leader who is currently coordinating with the regions on a voluntary basis should be given a role that matches up with the CRP national organization, to resolve the mismatch between CRP leadership at a national level as contrasted with regional direction in the hydro program in setting priorities and allocating resources.
- However, regional leaders who work on specific sets of hydro projects in particular watersheds need to be given the latitude to work with the unique characteristics of the environment and fish populations at stake, set of stakeholders and personalities, and regulatory requirements that apply with a particular watershed, and not be subjected to "one size fits all" top-down direction on approach and positions from the national level. Nevertheless, the overall watershed-scale regulatory program should be developed at the national level to build the framework within which a watershed approach can be empowered to be pursued in *any* watershed (and not just those where regional problems have become so pressing that a watershed approach emerges by default).

4. Coordination: How can NOAA Fisheries better coordinate its Hydropower and Community-based Restoration projects to build momentum within a watershed to open and create more opportunities for accessible habitat?

LOCATION OF PROGRAM ACTIVITIES IN THE WATERSHED

- CRP activities appear to occur lower in watersheds, nearer coasts and estuaries; hydro projects necessarily occur higher in the watershed (where the necessary “head” for hydro is found). It is not clear why hydro programs should not propose mitigation lower down in watersheds (particularly in the way of compensation or enhancement, but also in terms of flow management), or why CRP projects should not occur higher up.
- It was not clear how and to what extent a “CRP project” is substantially distinguished from a “hydro project” (other than the physical presence of a hydro project in the mix). Restoration (of course) should not be limited to low-in-the-watershed CRP projects. NOAA Fisheries’ Hydro Program should (and probably does) advocate for more benefits than simple miles of fish passage. Hydro license applications and processes typically propose a suite of Protection Mitigation and Enhancement (PM&E) measures, which include far more than just fish passage. NOAA Fisheries should have a procedure in place (like HEP) for evaluating and quantifying credits for this side of hydro mitigation as a basis for evaluating and integrating the two programs as a whole.

COORDINATION BETWEEN HYDRO & CRP

- The significant coordination issue is not so much a “how” question, as a “what/why” question. How can one program serve as a major tool for the other? That is to say, the issue isn’t so much how coordination occurs (e.g., by sharing data, or inviting to one another to each other’s meetings), but rather how one program can incorporate its sister program in creating opportunities for itself, and vice versa. For example, the Hydro Program, if it pursues the recommended watershed-scale regulatory framework with the hydro industry, FERC and Congress, could open entire watersheds for coordinated restoration opportunities.
- There is a tension between the national and regional scales of organization. CRP has national scale leadership, Hydro is regional with a national coordinator. This seems to lead to some degree of disconnect between Hydro and CRP at both the national and regional levels – or at least there was not a great deal of coordination touted in the presentations to the panel.
- The problems caused by a lack of coordinator authority to lead regions is discussed above. Regions are left without a framework negotiated with the hydro industry and FERC which regions could apply to leverage the NOAA Fisheries mission and goals on specific projects, leaving regions defaulting to an opportunistic project-by-project approach that ultimately depends too much on the odd responsive hydro owner.

5. Effectiveness: How can NOAA Fisheries improve its strategy and structure for evaluating agency-wide fish passage program outcomes?

SCOPE OF HABITAT PROGRAM GOALS

- Habitat conservation goals need to look at more than just passage, as discussed above.
- All passage projects should be routinely evaluated and scored to ascertain the extent and quality of habitat to which fish gain access, and these “scores” should be used to better characterize the comparative and ultimate values of proposed passage projects.
- The foregoing should be paired with the ability to implement goals to improve/restore habitat for the fish when they arrive in the habitat to which new passage grants access,

and this should be integrated in the approach NOAA Fisheries takes in negotiating PM&Es on each hydro licensing.

PROJECT SIZE AS A DRIVER OF STRATEGY

- NOAA Fisheries might realize some values in implementing restoration and recovery projects by investigating the ways in which the diversity in the typical sizes of projects among the regions lends itself to different strategies in each region.
- In the GAR, most projects are smaller and there appear to be potentially greater opportunities for dam removals as a centerpiece of strategy, especially when, as in the Penobscot, strategic removals are paired with generation improvements at dams left in place to create overall wins for all. The generally high density of human population and development in GAR should also be connected to specific strategies for habitat improvement that are tailored to the GAR that might not be as applicable everywhere.
- The West has generally larger projects than the Midwest and East. Surprisingly few Western projects afford passage (see West Region presentation). Although the opportunity to remove these larger projects (for example, the Snake River dams) and reengineer entire watersheds to provide a winning combination of habitat benefits and restoration improvements may be lower in the West, these fewer, larger projects typically sustain much larger budgets that provide an opportunity to fund larger-scale multi-stakeholder, multi-resource initiatives to develop overall workable solutions (again, the Klamath and Yuba case studies are exemplary).
- These contrasts provide NOAA Fisheries with an opening to consider differing strategic advantages and positions in the regions and develop policies and approaches that are tailored to the typical project characteristics to best advance NOAA Fisheries' mission and goals.

SEEK SETTLEMENT AGREEMENTS (SA), NOT TRIAL-TYPE HEARINGS

- The comparative advantage of Settlement Agreements (SA) was highlighted in the discussion of the large-scale multi-stakeholder processes that NOAA Fisheries is leading in the West. In general, this should be a strategy NOAA Fisheries adopts everywhere it participates in hydro licensing. Trial type hearings are notorious for generating and increasing conflict while generally failing to serve anyone's interests very well. It is far better to seek negotiated settlements, even though they may take years, rather than to force the issue in trial.
- I would not agree with the point that was made to the effect that the difference in getting to SA in PNW versus California is that there is a difference in culture. Rather, I think it is more a difference in pressure on resources. Stakeholders in California are responding to situations in which there is less room to maneuver because of these pressures (e.g., demand on water supplies, etc.); wherever intense resource pressures come to bear, NOAA Fisheries should expect commensurate changes in positions and intractability.

6. *Balance: What is the most effective balance for investing in implementation and monitoring and evaluation?*

CRP EVALUATION OF PROJECTS (FUNDING)

- Where the evaluation of projects depends less on objective technical and science merit and more on subjective “importance and applicability” criteria, it is critical to make these value criteria explicit (they were not clear in the panel presentation), and to continually revisit them with independent review to assure that they remain valid and are appropriately applied.

TRACKING HYDROPOWER PROGRAM SUCCESS METRICS/MONITORING

- The rather simplistic Hydro program metric – “stream miles opened” (fish passage, dam removal) – is addressed above. To the extent that it is applied only to upstream passage, it becomes even less useful.
- As addressed above, NOAA Fisheries should develop and use protocols to evaluate the provision of such habitat enhancements as gravel restoration, side channel development (etc.) when it participates in and evaluates project mitigation in hydro relicensing. The adequacy of hydro project PM&Es should not be evaluated solely on a simple one-dimensional metric, even when it is as critical as opening miles of new fish passage.
- The metric regarding “increased presence” of target (listed) species also needs to be carefully applied. Simple observation of the presence of a fish should not be over-interpreted. Distribution and abundance should be used instead, and NOAA Fisheries should request study plans that provide this information for Federally-listed species, Where data is lacking for State species of concern, and Tribally significant species, a comprehensive overview should be developed for project mitigation.
- Level of detail also needs to be more carefully handled. Science depends on precision and accuracy, and where results are used in advancing the state of science, they should be presented as precisely and accurately as possible. However, where measures and standards are presented as rough benchmarks to evaluate success, much more attention needs to be given to how significant the digits are that are presented, not only in terms of scientific precision, but also in terms of their value to policy- and decision-makers. Where fine distinctions and excessive significant digits enter the public discourse they can become targeted, misappropriated, and misused by opponents of science. For example, how meaningful is it to say that recovery will be successful with 10,100 returning fish (as was presented to the panel)? Thinking of this in terms of the value for decision-makers and in terms of vulnerability to those who misuse science, why is this target more meaningful or useful than a simple rough benchmark of 10,000? How well can you defend the proposition that recovery would not occur with a return of 10,099 or even 9,990? Generally, where numbers are presented as rough benchmarks of success, they should not be stated as if they reflected scientific precision. Where decision-makers need to distinguish between acceptable and unacceptable levels of impacts, meaningful ranges should be given that clearly illustrate either the presence of significant effects, or the inability to distinguish effects from baseline.
- In general, the presentations focused on “how” success/programs are evaluated, but not “what” the current evaluation is with regard to NOAA Fisheries needs to expand, coordinate or reengineer them. This cuts across several of these themes.

7. *Engagement: What steps NOAA Fisheries take to improve outreach to ensure that they are effectively communicating the importance of fish passage?*

IS ENGAGEMENT WORKING?

- The practical evidence from the Klamath and Yuba case studies indicates that the engagement NOAA Fisheries has practiced in those settings has been astute and has worked very well.
- With regard to communicating the importance of fish passage per se, this question is best evaluated by a professional public outreach and communications consultant. However, I again caution NOAA Fisheries not to become too narrow, as if its sole mission were passage.

WHEN TO START WORK

- Program materials tout that engagement begins “early in relicensing”, but it should be noted that this is probably too late. NOAA Fisheries engagement needs to start *before* projects enter the relicensing cycle. Too much is going on by then for most hydro owners to be able to pull back and look at big picture options. This is particularly true if the objective is to coordinate licensing among multiple projects in a watershed that have different license expiration dates or different owners.