

**Yadkin Hydroelectric Project
Recreation, Aesthetics, and Shoreline Management IAG
County Economic Impacts IAG
Joint Meeting
June 30, 2005**

**Alcoa Conference Center
Badin, North Carolina**

Draft Meeting Summary

Meeting Agenda

See Attachment 1.

Meeting Participants

See Attachment 2.

Welcome and Introductions

Wendy Bley, Long View Associates, opened the meeting with introductions and a review of the agenda. She explained that the purpose of the Recreation, Aesthetics, and Shoreline Management Issue Advisory Group (IAG) and the County Economic Impacts IAG joint meeting was to review and discuss two draft study reports – the Recreation Economic Impact Study Report and the County Economic Impacts Draft Study Report. Wendy introduced David Blaha, ERM, who conducted the Recreation Economic Impact Study and Katherine Heller, RTI, who conducted the County Economic Impacts Study. She explained that when the two studies were scoped the IAGs identified the potential for overlap – the Recreation Economic Impacts Study estimates the economic contribution of recreational use at the Yadkin Project to the regional economy while the County Economic Impacts Study quantifies the impact of the Yadkin Project reservoirs on businesses and properties in the five counties surrounding the Project. Because many of the reservoir related businesses are recreation oriented, Wendy noted that the estimates included in the ERM and RTI report may overlap to some extent, and therefore are not additive.

Recreation Economic Impact Study Draft Report

David Blaha explained that ERM collaborated with Global Insight, who ran the IMPLAN model on the Recreation Economic Impact Study. David reviewed the two principle objectives of the study: 1) to quantify the economic contribution of recreational use at the Yadkin Project to the regional economy and 2) to evaluate the effects of alternative High Rock Reservoir operations on recreational spending. David described the existing and three alternative operating scenarios at High Rock Reservoir evaluated in the study (see Attachment 3 – ERM Meeting Presentation).

After a brief description of the IMPLAN model, David explained that ERM and Global Insight used the model to estimate changes in regional economic activity, specifically direct, indirect,

and induced spending. The model was applied to the five-county study area: Rowan, Davidson, Davie, Stanly and Montgomery counties. He explained that the IMPLAN model requires three inputs: 1) recreational use estimates, 2) recreational spending estimates for each user group, and 3) study area multipliers. David reviewed the source of each of these inputs. Recreational use data collected during the Recreation Use Assessment conducted by ERM were used to estimate recreational use at the Project (approximately 2.5 million recreation days). Surrogate reservoirs (Narrows Reservoir, Lake Wylie, and Lake Norman) were used to estimate recreational use under the three alternative operating scenarios. For comparison purposes, ERM then converted all monthly recreation use numbers into percentages of the highest use month for the existing and alternative operating scenarios.

Larry Jones, High Rock Lake Association, asked why the percentage of use for HR Alternative 1 for the month of May was so low (76%) when recreational use during that same month at Lake Wylie and Lake Norman is much higher (100%). David explained that he thought that recreational use would actually increase somewhat during this month under Alternative 1, but would remain less than the 100% maximum at Lake Wylie since use at High Rock appears to be more summer oriented. In April, recreational use at High Rock Reservoir was found to be 24% less than at Lake Wylie (managed comparably to Alternative 1) – this same differential was applied to May (Lake Wylie was at 100% in May minus 24% would equal 76% for High Rock Reservoir).

Continuing, David explained that he then converted the percentages to an actual number of recreation days per month for each operating scenario.

David explained that the second model input, recreational spending estimates for each user group, was taken from the various surveys (visitor use survey, waterfront resident survey, private community use survey, phone surveys with businesses/clubs, canoe portage registry) administered during the Recreation Use Assessment. This information was used to estimate total direct recreational spending for each visitor type and each reservoir. Larry Jones questioned the low dollar figure (\$2.02) for waterfront residents (primary) at High Rock Reservoir. He said that if he had 10 people visit his waterfront home on a given day it would be impossible to feed them for \$20. David explained that the dollar figure is an average number spread across the 365 days in a year. The estimates of recreational spending come directly from the survey responses.

David briefly discussed the last input into the model – the study area multipliers. David showed a table with the multipliers associated with each industrial sector. Don Rayno, NC Division of Water Resources, asked about the source of the multipliers. David explained that they are a weighted average of the five counties in the study area.

David shared the results of the IMPLAN modeling of the existing and alternative operating scenarios at High Rock – see table below. He concluded that HR Alternative 1 would generate the most economic benefits (+18%), HR Alternative 2 would generate modest economic benefits (+5%), and HR Alternative 3 would significantly reduce the economic benefits (-40%). Larry Jones and Monty Crump, Yadkin Pee Dee Relicensing Coalition, asked if taxes (e.g., sales and gasoline taxes) were accounted for. Jeff Jones, City of Salisbury, commented that the price of fuel is higher today than in 2003-2004, when the expenditure information was collected.

	Existing Conditions	HR1	HR2	HR3
Spending	\$5.3 million	+23%	+10%	-39%
Employment	82 jobs	+17%	+5%	-40%
State Taxes	\$230,000	+17%	+5%	-40%
Total Economic Output	\$4.6 million	+18%	+5%	-40%

Robert Van Geons, Stanly County Economic Development Council, asked if recreational use and spending was accounted for at any of the other three Project reservoirs. David responded yes – the IMPLAN model results show that the four reservoirs together generate approximately \$9.6 million in annual economic output and support approximately 175 jobs under existing operating conditions. David said that he also looked at the total economic output numbers (\$9.6 million and 175 jobs) as a percentage of the regional economy, which is about 0.04% of the five-county region’s economic output and 0.12% of the region’s employment. He said that a similar study conducted in Duke Power’s Catawba Wateree relicensing had a very similar result (0.04%).

David solicited additional comments on the Draft Report. In response to a comment from Mark Bowers, US Fish and Wildlife Service, about differences in spending by recreational activity David said that he recognizes that spending habits are different based on the recreational activity (e.g. there are more expenditures to go out boating than to go out sunbathing).

Don Rayno asked David if ERM would be able to run IMPLAN with a different operating scenario, should APGI and the participants agree on an operating alternative not already considered. David replied yes.

Larry Jones questioned why the total economic output from High Rock Reservoir under the existing condition (\$4.6 million) is less than total spending (\$5.3 million). David said that he had asked the same question of Global Insight. He agreed to follow-up and provide a response to both IAGs.¹ Katherine Heller thought it might have something to do with some of the multiplier spending occurring outside of the five-county region.

County Economic Impacts Draft Report

Katherine Heller reviewed the objectives of the County Economic Impacts Study: 1) to understand and attempt to quantify the impact of the Yadkin Project reservoirs on businesses and property values in the surrounding five counties and 2) to understand and attempt to quantify the impact of alternative water level management scenarios on businesses and property values in the surrounding five counties (see Attachment 5- RTI Meeting Presentation). Katherine explained that RTI used two different approaches to assessing impacts on reservoir-related businesses and impacts on property values. To estimate impacts on reservoir-related businesses, RTI identified all reservoir related businesses (about 800), refined the list of businesses (to about 260) to focus on those expected to be the most affected, gathered information from public sources and conducted telephone interviews, and applied impact estimates from interviews to county level

¹ ERM checked with Global Insight about why total output is less than direct spending. Global Insight’s explanation is provided as Attachment 4 to this meeting summary.

Census data for relevant NAICS codes. She noted that a majority of the businesses interviewed did not provide sales data, so RTI used publicly available information.

Continuing, Katherine described the method for estimating impacts on property values. RTI collected GIS data for counties bordering North and South Carolina reservoirs and then constructed a statistical model to explain the percentage changes in home sale prices as a function of house and property characteristics, including distance to reservoir shoreline and range of reservoir water levels.

Katherine described the three alternative water levels for High Rock Reservoir used in the analysis (labeled Scenario 1, 2, and 3). The alternatives are the same as those used in ERM’s Recreation Economic Impact Study.

Impacts on Reservoir-Related Businesses

Larry Jones asked how RTI narrowed the list of 800 businesses to 260. Katherine explained that 800 businesses are located within the five-county study area. However, RTI could not interview all 800 businesses so RTI worked with APGI, IAG members, and others with local knowledge to refine the list and prioritize the businesses that would be included in the interviews. During the first round of interviews, RTI contacted 35 businesses. In a second round of interviews RTI followed up with the same 35 businesses to discuss the alternative operating scenarios, as well as other process-related businesses (e.g. APGI, Duke Power etc.). Katherine noted that some recreational/tourism related businesses, such as bait shops and marinas, were included in the interviews and therefore, there is some overlap with the ERM study and double counting to an extent.

Katherine summarized the findings of this part of the study:

- Most businesses are small: 80% have annual revenues less than \$ 1 million.
- For most businesses, Scenarios 1 and 2 are expected to increase revenue, Scenario 3 is expected to decrease revenue.
- Two process-related businesses, Salisbury-Rowan Utilities and APGI, expect to be adversely impacted by Scenarios 1 and 2, and expect Scenario 3 to have a positive impact.

Alternative	Low Impact Estimated % Change in Revenue	High Impact Estimated % Change in Revenue
Scenario 1	10%	20%
Scenario 2	2%	10%
Scenario 3	-20%	-100%

Don Rayno asked if the percentages in the above table included the power companies. Katherine said that RTI did not hear back from Duke’s Buck Steam Station, but noted that under Scenario 3, when the reservoir was drawn down 20-ft in the winter, the Buck Steam Station would be unable to generate (an economic impact because of increased costs from generating from a higher cost source). Larry Jones suggested that this impact be characterized as lost revenues, not increased costs. Katherine said that Duke described the impact as increased costs because Duke

has contracts for the power, so the power will be generated somewhere, but at a higher cost. Katherine explained that while RTI estimated the impact to Duke Power, it did not receive Duke's approval to use the estimate in the study report.

Katherine explained that to quantify the impact estimate RTI used NAICS code revenue data and applied the percent estimates from the interviews and multiplied by the number of affected businesses to get the low and high county impact estimates by NAICS code (see Table 2-3 in the Study Report). Larry Jones asked that "impact" in the column headers be revised to say something like "revenue change for directly affected businesses", which more accurately characterizes the situation since IMPLAN has not been run to quantify the total impact (i.e. the numbers in Table 2-3 are only a subset of the overall impact). Katherine agreed to re-title the column headers.

Impacts on Property Values

To quantify the impact of the Project reservoirs on property values in the surrounding counties, Katherine said that RTI collected parcel level data for counties bordering eight reservoirs in North and South Carolina (Narrows Reservoir, High Rock Reservoir, B. Everett Jordan Reservoir, Falls of Neuse Reservoir, Lake Norman, Lake Tillery, Lake Wylie, and Mountain Island Reservoir). Only counties for which home sales price was available were included, so Davidson County was not included. RTI conducted a supplemental analysis with proxy variables for Davidson County, which may be less reflective of the purchase price. Properties without structures and those more than two miles from the shoreline were also excluded. Max Walser, Davidson County, said that recent homes sales data is available from the County. Katherine said that RTI needs GIS-based parcel level information, which was not available in the County's planning database. Katherine explained that RTI used 2001 assessed values. Mel Woffard, High Rock Lake Association, commented that the 2001 assessments/values are outdated.

Katherine explained that RTI conducted a Hedonic analysis. The basic concept of this type of analysis is that the value of a property can be broken down into the value of its individual characteristics, such as physical characteristics (number of bedrooms, age, acres) and locational characteristics (distance to shoreline, county, reservoir water level range).

Katherine summarized the model results, without Davidson County:

- Dependent variable: natural log of homes sales price
- An additional bedroom increases home sales price by about 33%, an additional acre by 9%
- Being located within 0.05 miles of the shoreline more than doubles home sales value
- An additional foot of range in water level decreases home sales price by 0.4%
- For homes within 0.05 miles of the shoreline, an additional foot of water level range has a larger impact: - 2.74%

Larry Jones said that the \$10,000 per acre number used for shoreline property is absurd. He said that shoreline property is about \$1,000 per foot. Katherine said that the calculation included each of the eight reservoirs included in the analysis so the \$10,000 per acre number is an average.

Larry also questioned the number of homes in Rowan County within 0.05 miles of the shoreline included in Table 3-12 (69 homes). The total number of homes within two miles of the shoreline (295) also seems low. Larry suggested that the number is more like 800. Katherine said that it was an error in the report – 269 is the number of homes included in the home sales database. Larry commented that the possible change in Rowan County tax receipts will be more like \$250,000 than \$20,000. Katherine agreed to go back and get the actual number of homes within two miles of the shoreline and recalculate the tax receipts for Rowan County in the final report.

Katherine compared the results of the analysis with and without Davidson County. Because assessed values were used in place of the homes sales price and the year of the assessment was used instead of the year of the sale, the numbers for Davidson County are artificially depressed.

Don Rayno asked Katherine to explain how water level ranges factored into the analysis. Katherine referred to Table 3-5 in the report. The range, as expressed in the table, is the difference between the maximum and minimum water level for 2002-2003. Mel Woffard asked if the analysis accounted for any water level variability during the recreation season. Katherine said that range in the table is the maximum drawdown over the two year period.

Katherine discussed the impacts on homes sales price under the existing condition and the three alternative operating scenarios in Rowan County (main analysis) and in Rowan and Davidson Counties (supplemental analysis). For each scenario, RTI multiplied the number of affected properties times the estimated change in home sales values to get a total change in the tax values. The total change in the tax values reported for Rowan County were based on the wrong number of properties and therefore were understated (\$20,000 instead of \$250,000). The impacts on tax receipts in Davidson County is approximately \$500,000. Gene Ellis, APGI Yadkin Division, asked what percentage \$500,000 is of Davidson's County budget. Max Walser said that the County's budget is \$100 million plus. Max commented that the \$500,000 impact on tax receipts seems very conservative. He said the number is probably more like \$2 million. Max said that using the 2001 assessed values is a flaw in the study.

Katherine reviewed the overall conclusions of the study:

- The existence of the reservoirs increases the value of nearby residential property, especially homes within 0.05 miles of the shoreline.
- Water level management scenarios could convey windfall gains (for reduced water level range) or windfall losses (for increased water level range) for property owners and most businesses.
- Water level range has 2 to 6 times the impact on home sales prices for home <0.05 miles from shore than on other nearby homes.
- APGI and Salisbury-Rowan Utilities expect to be hurt by a smaller water level range.
- Impacts on individual businesses may be significant, but impacts on the industries as a whole within Rowan and Davidson Counties are expected to be relatively small.
- Similarly, impacts on individual homes sales prices, especially for shoreline and shore-view homes, may be substantial, but impacts on overall tax base are expected to be relatively small.

Larry Jones asked that the revised report include a summary that shows the total economic impact to the region. Katherine noted that the numbers in the report are not additive. Katherine, with Gene's concurrence, agreed to summarize the numbers in a single table in the report's Executive Summary with a note that the numbers are not additive.

Larry again asked that the report address the impacts to the local economy if Duke's Buck Steam Station has to go off line. Katherine explained that RTI could not get Duke to agree with how RTI characterized the impact and therefore could not include the discussion in the report.

Monty Crump said that he was disappointed that RTI's work did not discuss his calculated combined \$50 billion dollar revenue stream from both the APGI and Progress Energy Projects. He said that a tremendous amount of wealth is being transferred out of the region. He said that the relicensing provides an opportunity to try and retain some of this money locally.

Jeff Jones asked that RTI either use sales prices or assessed values, but not both in their analysis so as not to skew the statistics.

Larry asked that the revised/final report not just be footnoted with the correct numbers. He asked that the correct numbers be included in the body of the final report. Katherine agreed. She also committed to following up with Davidson County to see if homes sales price data is available by parcel number.

Wrap-up

Wendy asked that any further comments on either of the draft reports be submitted by August 1, 2005.

The meeting adjourned at about 3:00 p.m.

Attachment 1 – Meeting Agenda

**Yadkin Project
(FERC No. 2197)
Communications Enhanced Three-Stage Relicensing Process**

**Recreation, Aesthetics and Shoreline Management
County Economic Impacts
Joint Issue Advisory Group Meeting**

**Thursday, June 30, 2005
Alcoa Conference Center
Badin, North Carolina**

1:00 PM – 4:00 PM

Preliminary Agenda

1. Introductions, Review Agenda
2. Review and Discuss Recreation Economic Impact Study Draft Report
3. Review and Discuss County Economic Impacts Draft Report
4. Wrap-up and Next Steps

Attachment 2 – Meeting Participants

Name	Agency/Organization
Coralyn Benhart	Alcoa
David Blaha	ERM
Don Rayno	NC Division of Water Resources
Donna Davis	Stanly County
Gene Ellis	APGI, Yadkin Division
Guy Cornman	Davidson County
Jeff Jones	City of Salisbury
Jody Cason	Long View Associates
John Ellis	US Fish and Wildlife Service
Katherine Heller	RTI
Larry Jones	High Rock Lake Association
Lee Hinson	Concerned Property Owners High Rock Lake
Mark Bowers	US Fish and Wildlife Service
Matt Brinkley	Town of Badin
Max Walser	Davidson County
Mel Woffard	High Rock Lake Association
Monty Crump	Yadkin Pee Dee Relicensing Coalition
Robert Petree	SaveHighRockLake.org
Robert Van Geons	Stanly County EDC
Roy Rowe	Piedmont Boat Club
Steve Reed	NC Division of Water Resources
Todd Ewing	NC Wildlife Resources Commission
Wendy Bley	Long View Associates

Attachment 3 – ERM Meeting Presentation

**Yadkin Recreation Economic Impact Study
Draft Report
June 30, 2005**



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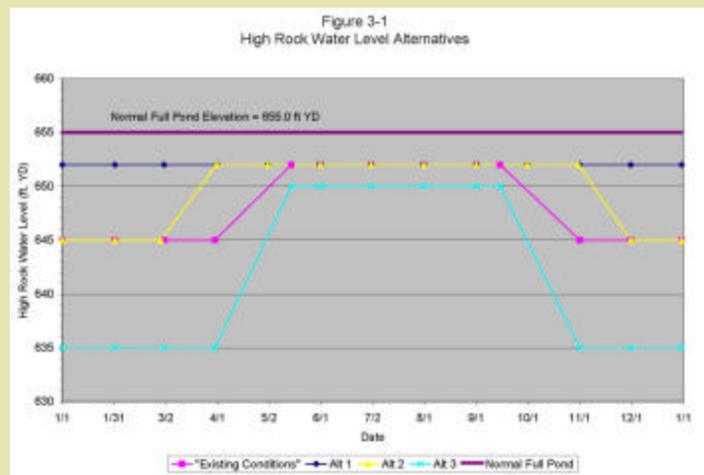
Recreation Economic Impact Study - Objectives

- **Quantify the economic contribution of recreational use at the Yadkin Project to the regional economy.**
- **Evaluate the effect of alternative High Rock Reservoir operations on recreational spending.**

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Operational Alternatives



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IMPLAN Model

- **IMPLAN (Impact Analysis for Planning) Model**
 - U.S. Forest Service model used to estimate changes in regional economic activity
 - Draws data from many federal sources
 - Estimates direct, indirect, and induced effects
- **Study Area**
 - 5 county region surrounding the Project
 - Davidson, Davie, Montgomery, Rowan, and Stanly counties

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Model Input

- Three primary data inputs
 - Recreational use estimates
 - Recreational spending estimates for each user group
 - Study area multipliers

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Model Input - Existing Recreational Use (in recreation days from RUA)

Visitor Type	High Rock Reservoir	Tuckertown Reservoir	Narrows Reservoir	Falls Reservoir	Total
Public Areas (Visitors)	82,846	51,887	127,561	4,159	266,453
Waterfront Residents	1,058,585	0	285,993	0	1,344,578
Non-waterfront residents	269,448	0	450,009	0	719,457
Businesses and clubs	132,982	2,465	95,570	0	231,017
Canoe/kayak	30	0	20	20	70
Total	1,543,891	54,352	959,153	4,179	2,561,575

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Model Input – Recreational Use for the Water Level Alternatives

- Surrogate reservoir criteria
 - located in the Southeast
 - available monthly recreational use data (preferably broken down by user group)
 - significant waterfront residential population
- Useable data available for:
 - Narrows Reservoir – operates similar to HR 1
 - Lake Wylie – operates similar to HR 1
 - Lake Norman – operates similar to HR 2

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Existing Recreational Use by Month (as a percent of maximum month)

Month	High Rock	Narrows Reservoir	Lake Wylie	Lake Norman
May	65	32	100	100
June	96	72	73	75
July	100	100	92	84
August	100	70	70	67
September	75	52	67	75
October	58	37	48	49
November	17	28	35	48
December	11	17	30	34
January	10	17	34	46
February	10	17	27	38
March	25	16	40	51
April	45	24	69	73

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Projected HR 1 Recreational Use

Month	Existing Condition	Narrows Reservoir	Lake Wylie	Lake Norman	HR1
May	65	32	100	100	76
June	96	72	73	75	96
July	100	100	92	84	100
August	100	70	70	67	100
September	75	52	67	75	80
October	58	37	48	49	63
November	17	28	35	48	35
December	11	17	30	34	30
January	10	17	34	46	34
February	10	17	27	38	27
March	25	16	40	51	40
April	45	24	69	73	69

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Projected HR 2 Recreational Use

Month	Existing Condition	Narrows Reservoir	Lake Wylie	Lake Norman	HR2
May	65	32	100	100	76
June	96	72	73	75	96
July	100	100	92	84	100
August	100	70	70	67	100
September	75	52	67	75	80
October	58	37	48	49	63
November	17	28	35	48	26
December	11	17	30	34	11
January	10	17	34	46	10
February	10	17	27	38	10
March	25	16	40	51	33
April	45	24	69	73	69

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Projected HR 3 Recreational Use

Month	Existing Condition	HR3
May	65	52
June	96	77
July	100	80
August	100	80
September	75	67
October	58	10
November	17	5
December	11	5
January	10	5
February	10	5
March	25	5
April	45	10

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Comparison of Projected HR Reservoir Recreational Use

Month	Existing Condition	HRI	HR2	HR3
May	65	76	76	52
June	96	96	96	77
July	100	100	100	80
August	100	100	100	80
September	75	80	80	67
October	58	63	63	10
November	17	35	26	5
December	11	30	11	5
January	10	34	10	5
February	10	27	10	5
March	25	40	33	5
April	45	69	69	10

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Model Input – Recreational Spending

- Recreational spending for each user group drawn from various surveys
 - Visitor Use Survey
 - Waterfront Resident Survey (P and S)
 - Private Community Use Survey (P and S)
 - Business/Clubs – phone survey
 - Canoe/Kayaks – assumed same as Visitors

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Estimate of Total Direct Recreational Spending

Visitor Type	High Rock Reservoir	Tuckertown Reservoir	Narrows Reservoir	Falls Reservoir	All Reservoirs
Public Areas (Visitors) – VUS	\$8.96	\$7.21	\$10.48	\$17.31	\$9.24
Waterfront Residents – Primary – RUS(P)	\$2.02	NA	\$2.41	NA	\$2.07
Waterfront Residents – Seasonal – RUS(S)	\$2.11	NA	\$2.23	NA	\$2.16
Non-waterfront Residents – Primary – PCUS(P)	*	NA	*	NA	\$2.82
Non-waterfront Residents – Seasonal – PCUS(S)	*	NA	*	NA	\$2.74
Businesses and Clubs	\$16.26	\$17.21	\$20.28	NA	\$17.91
Canoe/kayak	*	*	*	*	\$9.24

* - too small a sample size
 NA - not applicable

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Model Input – Study Area Multipliers

Type of Good or Service	IMPLAN Sector	Employment	Output	Proprietors Income	Employee Compensation
Bait/Tackle	409 Sporting Goods, Etc.	1.17	1.34	1.12	1.29
Equipment Rental	435 General Goods Rental	1.30	1.47	1.27	1.30
Food Stores (i.e., groceries)	405 Food and Bev. Stores	1.20	1.35	1.48	1.23
Gasoline (car/boat)	407 Gasoline Stations	1.22	1.35	1.13	1.34
General Merchandise Stores	410 General Merchandise	1.15	1.33	1.85	1.21
Guide/Outfitters Services	490 Other Personal Ser.	1.53	1.38	1.23	1.71
Lodging (Motel/House Rental)	479 Hotel and motel	1.14	1.26	1.20	1.22
Other	490 Other Personal Ser.	1.53	1.38	1.23	1.71
Other Recreation Services	478 Other Amusement	1.29	1.38	1.83	1.36
Repair Service (Car/Boat)	483 Auto Repair	1.31	1.45	1.16	1.42
Restaurants & Drinking Places	481 Food and Drink Places	1.17	1.41	3.21	1.31
Seasonal Boat Rental Fee	432 Auto Rental	1.85	1.45	1.45	1.66
Use Fees	478 Other Amusement	1.29	1.38	1.83	1.36

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Results - Comparison of HR Alternatives

	Existing Conditions	HR1	HR2	HR3
Spending	\$5.3 million	+23%	+10%	-39%
Employment	82 jobs	+17%	+5%	-40%
State Taxes	\$230,000	+17%	+5%	-40%
Total Economic Output	\$4.6 million	+18%	+5%	-40%

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Conclusions

- **HR 1 (maintain near full pond year round)**
 - would generate most economic benefits (+18%)
- **HR 2 (lengthen shoulder season)**
 - would generate modest economic benefits (+5%)
- **HR 3 (lower water levels)**
 - would significantly reduce econ benefits (-40%)

Attachment 4 – Response from Mr. Phillip Hopkins, Global Insight, about Total Output is less than Direct Spending

The reason for the difference is what is called the retail margin. The retail margin is the markup, or the difference between the retail price of a good and the price a retailer pays to buy a good from a wholesaler, including transportation costs incurred in shipping a wholesale good to the retailer. Since most retail goods sold in a small regional economy such as the Yadkin study area are purchased from wholesalers located elsewhere, such as Charlotte, and more importantly, are manufactured elsewhere, most of the direct spending at a retail store leaks out of a regional economy. For example, for the Yadkin study area, IMPLAN has a retail margin of .266 for purchases at general merchandise stores and .208 for purchases of gasoline. Thus, the only incremental economic impact, or direct increase in output in the Yadkin study area, from an increase in retail recreation spending is $.266 \times$ direct spending for general merchandise and $.208 \times$ gasoline purchases. The margined portion of the sales kept by the retailer (i.e., $.208 \times$ gasoline purchases) is then used by the retailer to pay employees (who then spend their income in the local economy, purchases services such utilities, and accounting, while some is also kept as profit. The remaining non-margined portion of the expenditures ($1 - .266 \times$ gen. Merchandise spending) and ($1 - .208 \times$ gasoline purchases) thus does not result in an increase in output in the region, but flows directly outside of it to the wholesalers.

For tourism studies of larger economies, such as a state, what we will sometimes do is assign the non-margined portion of retail expenditures to a mfg sector if we know that a product sold at retail is also made within the state. For example, if we were analyzing the entire state of NC and knew that a boat purchased at retail was also manufactured in the state, we would assign the non-margined part of the retail expenditure to the boat mfg. industry. Since the Yadkin study area consists of 5 rural counties, the assumption is that non of the goods sold at retail will be produced there.

Note that retail expenditures includes purchases of such goods as for bait and tackle, food, gasoline, general merchandise stores. By contrast, expenditures for services, such as eating and drinking establishments, hotels and motels, boat repair or guides are not margined because they are not purchases of retail goods. For services, virtually all of the value is created on site (i.e., a restaurant buys a small amount of commodities, prepares a meal and sells it to customer at a price much larger than the value of the raw materials, with the value added created by the skill of the chef who turns the commodities into good meal). As a result, in the IMPLAN model the direct increase in study area output for the purchases services, such as hotels and motels, and eating and drinking, is exactly equal to the expenditures. By contrast, for the retail expenditures the direct increase in study area output is equal to the retail margin \times retail expenditure, with the retail margin varying by sector, but usually averaging about .2 or .3.

Attachment 5 – RTI Meeting Presentation

turning knowledge into practice

Impacts of the Yadkin Project on Businesses and Property Values in the Surrounding Five Counties

Presented by
Katherine Heller
RTI International

Presented at
Joint RASM and County Economic Impacts IAG Meeting
June 30, 2005
Badin, North Carolina



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RTI International is a trade name of
Research Triangle Institute

Objectives

- To understand and attempt to quantify the impact of the Yadkin Project reservoirs on businesses and property values in the surrounding five counties
- To understand and attempt to quantify the impact of alternative water level management scenarios on businesses and property values in the surrounding five counties

Technical Approach

- Two separate approaches:
 - How to assess impacts on reservoir-related businesses, and
 - How to assess impacts on property values
- Method for estimating impacts on reservoir-related businesses
 - Identify all potentially reservoir related businesses, then refine list to focus on those expected to be most affected
 - Gather information from public sources and interviews
 - Apply relative impact estimates from interviews to County-level Census data for relevant NAICS codes (to preserve confidentiality)

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Technical Approach, continued

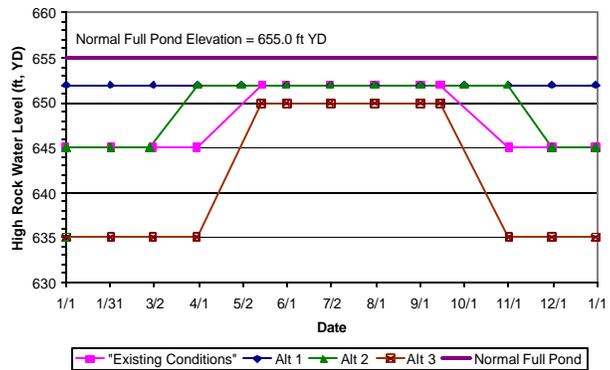
- Method for estimating impacts on property values
 - Collect GIS data for counties bordering NC & SC reservoirs
 - Construct statistical model to explain percentage changes in home sale prices as a function of house and property characteristics, including distance to reservoir shoreline and range of water levels in reservoir

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Alternative Water Level Scenarios



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Impacts on Reservoir-Related Businesses

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Reservoir-Related Businesses

- Initial list of 800 businesses in the five counties compiled from Chambers of Commerce, web directories, etc.
- Refined list to about 260 businesses by excluding those more than 5 miles from shoreline and those clearly not in reservoir-related industries (car dealerships, dry cleaners, doctors/dentists/veterinarians, etc.)
- Using local knowledge of APGI and IAG members, the list of 266 businesses were prioritized into 3 groups based on the type of business and their dependency on reservoir-oriented activity
 - Priority A: majority of revenues from reservoir-related activities (38 businesses)
 - Priority B: less than half revenue reservoir-related (95 businesses)
 - Priority C: very small share of revenues reservoir-related (114 businesses)

Two rounds of business interviews

- Round 1: Contacted 35 Priority A businesses for initial interviews
- Round 2: After alternative water level Scenarios defined, conducted second round, including Priority A and process-related businesses
- Respondents identified about 10 additional businesses, whom we contacted in second round and collected both round 1 and round 2 information

Interview Findings

- Most businesses are small: 80% have annual revenues less than \$1 million
- For most businesses, Scenarios 1 and 2 are expected to increase revenue, Scenario 3 is expected to decrease revenue
- Two process-related businesses, Salisbury-Rowan Utilities and APGI, expect to be adversely impacted by Scenarios 1 and 2, and expect Scenario 3 to have a positive impact

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Scenario Impact Estimates from Interviews

Alternative	Low Impact Estimated % Change in Revenue	High Impact Estimated % Change in Revenue
Scenario 1	10%	20%
Scenario 2	2%	10%
Scenario 3	-20%	-100%

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Quantifying Impact Estimates

- For confidentiality, used NAICS code revenue data from 1997 Economic Census for average business in NAICS codes in affected counties
- Applied percent impact estimates from interviews, multiplied by number of affected businesses to get low and high county impact estimates by NAICS code
- Compared to total sales for those NAICS codes to provide context for county-wide impacts

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Impacts on Property Values

Data Collection

- Obtained GIS property data for counties bordering seven reservoirs in NC and SC
- Included counties for which home sales price is provided (which omits Davidson County)
- Excluded properties without structures and those more than 2 miles from shorelines
- Conducted supplemental analysis with proxy variables for Davidson County

Reservoirs in Analysis

- Badin/Narrows Reservoir
- High Rock Reservoir
- B. Everett Jordan Reservoir
- Falls of Neuse Reservoir
- Lake Norman
- Lake Tillery
- Lake Wylie
- Mountain Island Reservoir

Hedonic Analysis

- Basic concept: Value of a property can be broken down into the value of its individual characteristics
- In our case: Value of a home near a reservoir depends on:
 - Physical characteristics of house (number of bedrooms, age and lot (area in acres)
 - Characteristics of its location
 - ◆ Distance to reservoir shoreline
 - ◆ County
 - ◆ Reservoir water level range

Model Results: without Davidson

- Dependent variable: natural log of home sales price
- An additional bedroom increases home sales price by about 33%, an additional acre by 9%
- Being located within 0.05 mile of the shoreline more than doubles home sales value
- An additional foot of range in water level decreases home sales price (in general) by 0.4%
- For homes within 0.05 mile of shoreline, an additional foot of water level range has a larger impact: -2.74%

Comparing Results: percentage change in house value for selected variables

Variable	Without Davidson County	With Davidson County (assessed value)
Number of Bedrooms	33.2%	33.5%
Acre of land	9.2%	12.1%
Location < 0.05 mile from shoreline	105.4%	85.2%
Location between 0.05 and 0.1 mile of shore	41.2%	42.9%
Location between 0.4 and 0.5 mile of shore	3.6%	3.5%
Additional foot of water level range (<0.05 mile)	-2.7%	-2.0%
Additional foot of water level range (all other)	-0.4%	-1.2%

Estimated Impacts on Home Sales Price: Rowan County, main analysis

Distance	Existing Conditions	Alternative Scenario 1	Alternative Scenario 2	Alternative Scenario 3
Water Level Range	Up to 12 feet	Up to 3 feet	Up to 10 feet	Up to 20 feet
Homes <0.05 mi	\$136,700	\$170,400	\$144,200	\$106,700
Homes between 0.05 and 0.5	\$110,900	\$115,300	\$111,900	\$106,600
Homes >0.5 mi	\$88,200	\$91,700	\$88,900	\$85,100

Supplemental Analysis Impacts: Rowan County

Distance	Existing Conditions	Alternative Scenario 1	Alternative Scenario 2	Alternative Scenario 3
Water Level Range	Up to 12 feet	Up to 3 feet	Up to 10 feet	Up to 20 feet
Homes <0.05 mi	\$136,700	\$162,100	\$142,300	\$114,000
Homes between 0.05 and 0.5	\$110,900	\$115,300	\$111,900	\$107,000
Homes >0.5 mi	\$88,200	\$91,700	\$88,900	\$85,000

Supplemental Analysis: Davidson County

Distance	Existing Conditions	Alternative Scenario 1	Alternative Scenario 2	Alternative Scenario 3
Water Level Range	Up to 12 feet	Up to 3 feet	Up to 10 feet	Up to 20 feet
Homes <0.05 mi	\$140,700	\$166,900	\$146,500	\$117,400
Homes between 0.05 and 0.5	\$112,200	\$124,600	\$115,000	\$101,200
Homes >0.5 mi	\$108,000	\$120,000	\$110,700	\$97,400

Estimated Impacts on Tax Receipts

- For each scenario, multiplied number of affected properties times estimated change in home sales value to get total change in tax base; assuming assessed values changed accordingly, multiplied tax rates times tax base to estimate change in receipts
- Rowan County, main analysis (295 properties) : +\$20,500 (Scenario 1) to -\$18,600 (Scenario 3)
- Rowan County, supplemental analysis: +\$16,800 to -\$15,100
- Davidson County, supplemental analysis: +\$508,000 to -\$450,000 (6,082 properties)

Overall Conclusions

- The existence of the reservoirs increases the value of nearby residential property, especially those homes within 0.05 mile of the shoreline—their values may be more than twice those of comparable homes located farther from shore
- Water level management scenarios could convey windfall gains (for reduced water level range) or windfall losses (for increased water level range) for property owners and most businesses.
- Water level range has 2 to 6 times the impact on home sales prices for homes <0.05 mile from shore than on other nearby homes

Overall Conclusions, continued

- APGI and Salisbury-Rowan Utilities expect to be hurt by a smaller water level range
- Impacts on individual businesses may be significant, but impacts on the industries as a whole within Rowan and Davidson Counties (and thus on the overall county economies) are expected to be relatively small—at most an increase in NAICS code revenues of 2% or a decrease of 7% depending on the water level scenario
- Similarly, impacts on individual home sales prices, especially for shoreline and shore-view homes, may be substantial, but impacts on overall tax base are expected to be relatively small.