

Water Contingency Planning Task Force

Task Force Meeting Three

December 11, 2009

Reminder: Lake Lanier best option- economically and environmentally

While the Task Force is charged with evaluating alternatives to Lanier, this does not suggest these alternatives are superior

All alternatives pose significant incremental cost we don't currently face

- Economic costs (all options)
- Quality-of-life costs (all options)
- Environmental costs (many options)

Cost of inaction is massive- we must act...

...though attempting to replace Lanier as a water source would pose real burdens and require significant time

All analysis of alternatives re-affirms that Lake Lanier is the best water source for Metro ATL

Objectives of this meeting

Share outputs and key messages from recent Task Force survey

Discuss alternative solution portfolios

Explain where we need additional input and how finalization will work

Task Force Meeting Three Agenda

Opening	1:00 – 1:05	Governor Perdue
Takeaways from your feedback	1:05 – 1:25	
Addressing the supply shortfall- options and implications <ul style="list-style-type: none">• Ability to meet 2012 shortfall<ul style="list-style-type: none">– Role of conservation measures in portfolio• 2015 solution portfolio• 2020 solution portfolio options	1:25 – 2:10	
Next steps	2:10 – 2:20	
Commentary, your feedback	2:20 – 2:30	Governor Perdue

Agenda

Survey feedback

Recap: Survey following last meeting examined three main topics

1

Principles of option evaluation

- **By what principles do you evaluate potential solutions?**
 - Which considerations matter more/less?
- **To what degree would you consider**
 - mandated conservation (vs. incentives)?
 - state control (vs. local government)?
 - interbasin transfers into Metro district?
 - ...

2

Portfolio review

- **To what degree do you support the initial 2015 and 2020 solution portfolios? What would you change?**

3

Option assessments

- **To what degree do you support a given option for inclusion in the solution portfolio?**
- **Would you endorse this option even if Lake Lanier were re-authorized as a supply source?**

Task Force Survey: Context

Survey intended as a means to collect your input

- Not a "voting" mechanism
- Used to identify areas of agreement and recognize dissenting views
- Recognize there are some inherent limitations
 - Cost and yield figures, while comparable, are nonetheless *estimates*
 - Material has degree of technical complexity- challenging for a non-technical Task Force
 - Imperfect information regarding options (given lack of full hydrology studies, downstream impact studies)

Significant response rate achieved – 64 of 87 (74%)

- Respondent pool makeup closely resembles that of overall Task Force

Task Force Survey: Summary (I)

Principles of option evaluation

1

Principles of option evaluation

- General consensus that conservation should be incentive-driven
- Some acceptance of transfers on temporary basis to address a shortfall would be acceptable, but many question feasibility of this
- Recognition that cost efficiency and environmental impact must be balanced
- Notable division over issues of local vs. state control

Task Force Survey: Summary (II)

Portfolio review

2

Portfolio review

- Reaction to 2020 portfolio generally positive; 2015 more mixed due to high cost and low practicality
- Some concerns cited regarding inability to close 2012 gap and uncertainty around downstream impacts

Task Force Survey: Summary (III)

Option assessment

3

Option assessment

- Incentive-driven conserve options stand out as "no regret" moves (ie, supported even with Lanier reauthorization)
- Indirect Reuse, Reservoirs and groundwater supported as "contingency" options (ie, wouldn't support if Lanier reauthorized)
- Leak abatement supported, despite relatively high cost
- Inter-basin transfers show mixed support, strong areas of dissent

Feedback provides some logic for "alternate" 2020 portfolio, designed around multiple considerations beyond cost efficiency

Executive summary

Principles

Fairly strong agreement that conservation should be incentive-driven and that temporary transfers are acceptable to address a shortfall...

- "Should rely on incentives as much as possible, but portions may require mandate"
- "Conservation and water efficiency should be the underpinning – both incentives and mandates should be pursued"
- "The problem is large, all options should be in play"

But group is significantly divided over local vs. state control and long-term inter-basin transfers

- "Local government would be more effective" vs. "State will need to set some rules and parameters"
- "Metro area needs to eat this one" vs. "Transfers [into Metro area] should certainly be considered"
- "Moving water around does not solve the problem" vs. "Water transfers are essential and should be used long and short term"

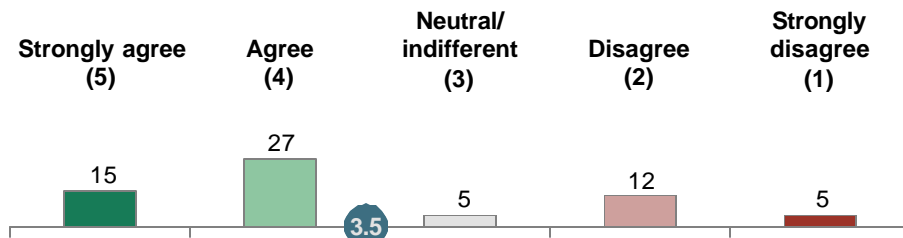
Most agree that both cost and environmental impact should be considered

- "Both [cost and environmental impact] are important and should be given appropriate consideration"
- "Cost effectiveness and environmental impact all need to be balanced"

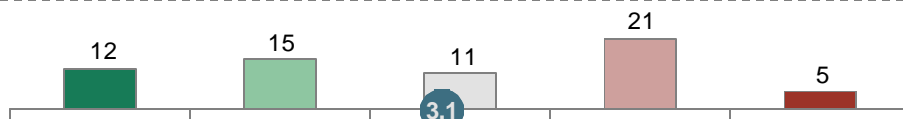
General agreement on incentive-driven conserv. and temporary transfers; division noted for 'local/state control', IBT

Key principles

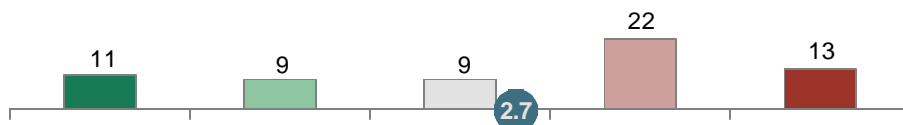
Conservation should be incentive-driven, not mandated



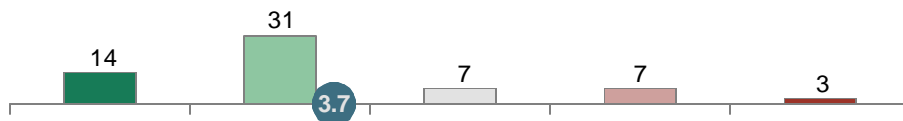
Local governments, utilities should retain policy control-versus state directed policy



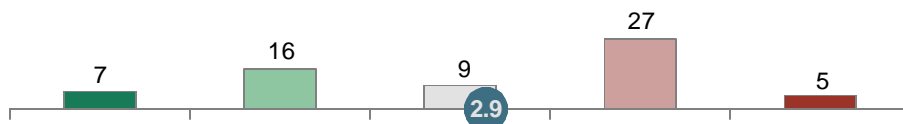
Water should not be transferred from outside the Metro Water District into the District – the Metro District should supply its own needs



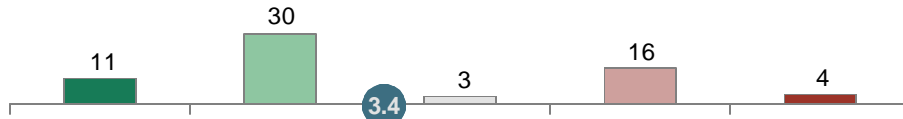
Water transfers, if temporary in nature, would be acceptable to address a shortfall



Solutions should be prioritized first on the basis of minimizing environmental impact, secondly on cost efficiency



Georgia should consider establishing market mechanisms to price water and allow transfer of sustainable yields from surplus regions



xx Mean score

Note: n=64
Source: Water Contingency Planning Task Force Survey results

General agreement on principles across most groups

Conservation-group affiliated members often differ

Key principles

Conservation should be incentive-driven, not mandated

Local governments, utilities should retain policy control-versus state directed policy

Water should not be transferred from outside the Metro Water District into the District – the Metro District should supply its own needs

Water transfers, if temporary in nature, would be acceptable to address a shortfall

Solutions should be prioritized first on the basis of minimizing environmental impact, secondly on cost efficiency

Georgia should consider establishing market mechanisms to price water and allow transfer of sustainable yields from surplus regions



Note: Groups defined as: "Business" - state and local business leaders; "Conservation" - state and local conservation experts; "Government" - state government officials, legislators, local elected officials; "Regional council" - chairs of state's regional water councils Source: Water Contingency Planning Task Force Survey results

Executive summary

Portfolios

Task Force members generally expressed positive reaction to 2020 option portfolio

- "Broadly based and well considered"
- "Good identification of options"
- "All should be considered and a combination of these will be necessary over the long term"

Reactions much more mixed for 2015 portfolio – based on cost and practicality

- Very costly solution, and not practical; Indirect Potable Reuse a very expensive work-around

Some significant concerns raised...

- "Appropriate mix of options, but none solve problem by 2012"
- "We should be focusing on infrastructure to ensure that water supply can be shared as of July 2012"
- "[Have some] concerns over downstream impacts"

Significant value in deferring to 2020, if we have the flexibility to pursue longer-term solutions

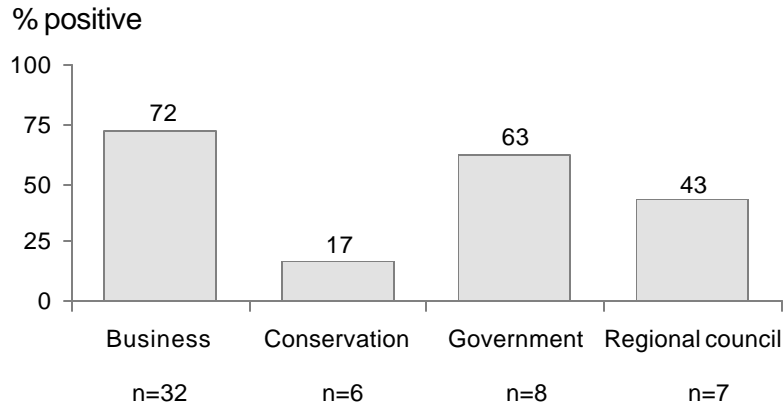
- "Good list, time is real issue, not options. List magnifies time issue"
- "The options make sense and mix is good if we can wait until 2020 to hit our goal"
- "Many options look attractive through 2020, but we need to get started and make commitments ASAP"
- "How confident are we that the court will negotiate the end date?"

Reaction to 2020 portfolio generally positive, while many cite high cost and low practicality of 2015 option portfolio

Reaction to mix

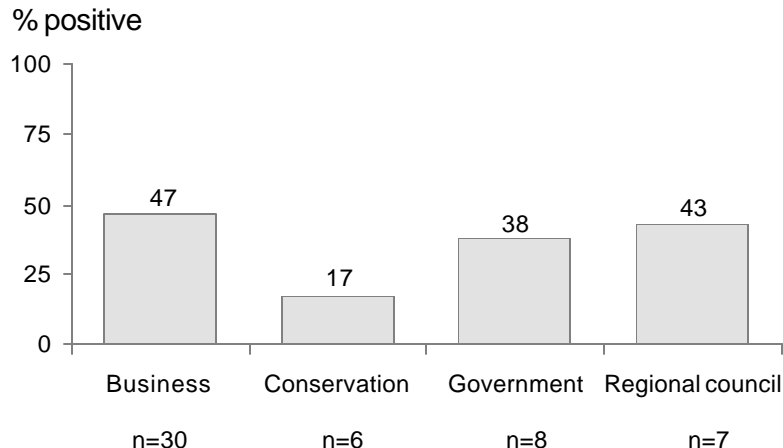
Notable comments

2020



- "Reservoir expansion and creation with conservation measures are the best options"
- "Conservation measures need to be adopted both inside and outside of Metro area"
- "We need to get more out of conservation"
- "Concerned that conservation measures alone aren't going to make a substantive difference"

2015



- "Cannot get there by 2012, and doing it by 2015 would be expensive"
- "Would probably eliminate ASR and indirect potable reuse... not realistic"
- "Indirect potable reuse is a very expensive way to do what we're already doing – drawing water out of the ACF and putting it back after using and treating it"

Note: groups defined as: "Business" - state and local business leaders; "Conservation" - state and local conservation experts; "Government" - state government officials, legislators, local elected officials; "Regional council" - chairs of state's regional water councils
 Source: Water Contingency Planning Task Force Survey results

Executive summary

Options

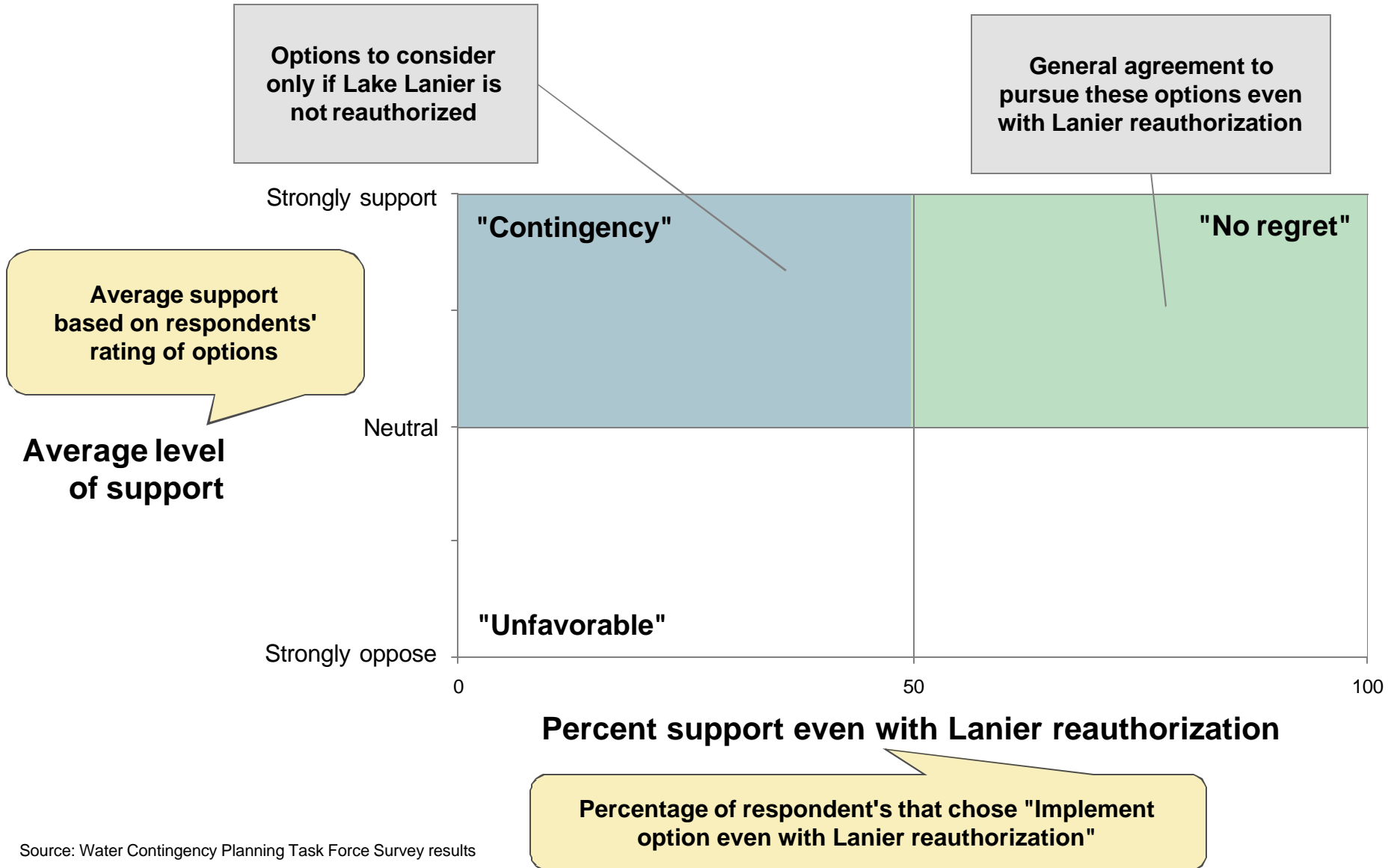
Group clearly agrees that more can, and should be, accomplished via conservation

- Incentive-driven fixture retrofits + conservation pricing identified as options to be pursued even if Lake Lanier reauthorization is obtained
- Task Force members generally favor incentive-driven implementation, but many recognize that mandates serve a role in contingency situations
 - "[Mandates] may not go over well, but [they are] decisive and effective"

In the event of no reauthorization, reservoirs + groundwater supply emerge as front-running "contingency" options

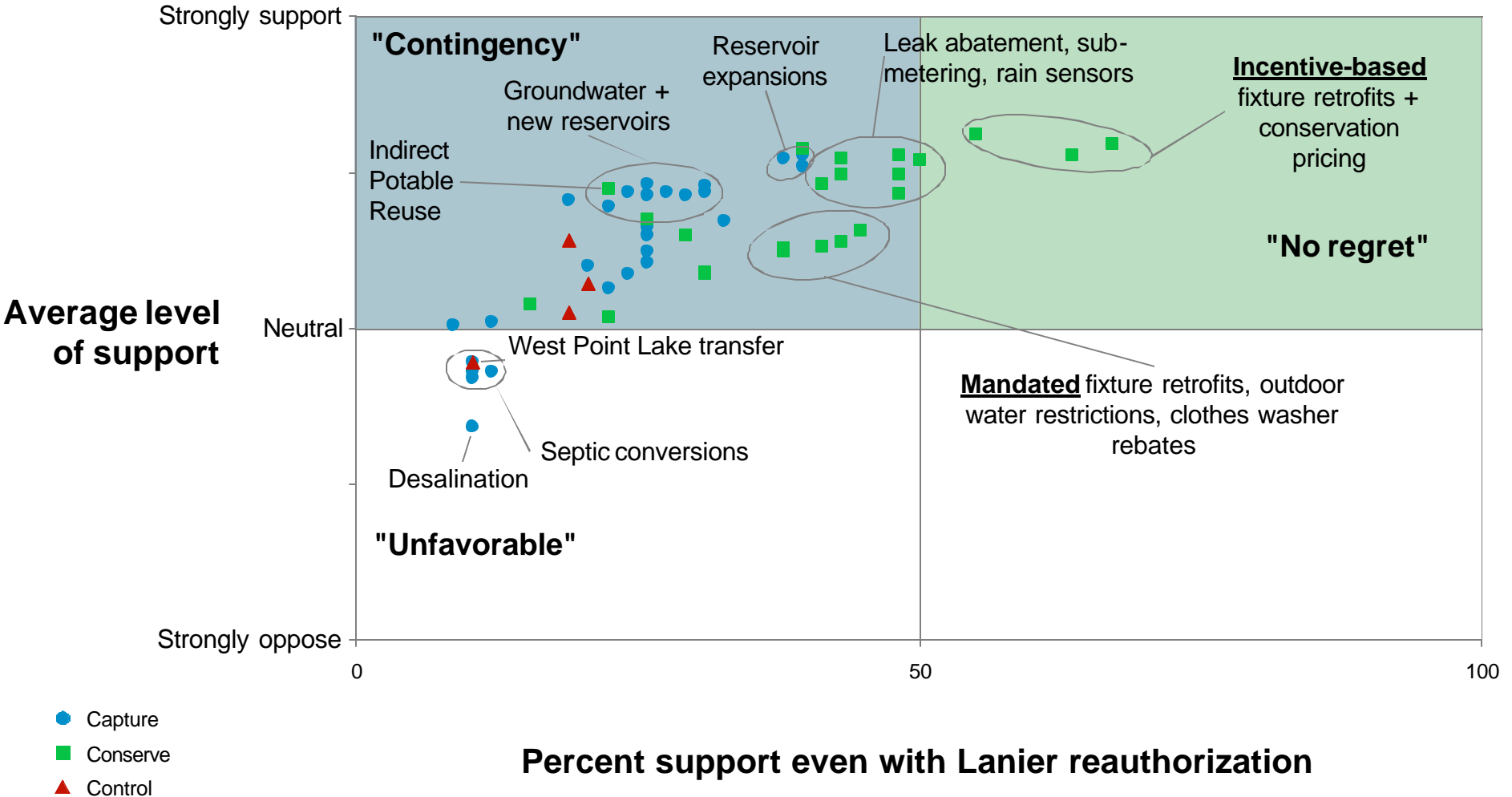
- Desalination, septic conversion, and groundwater from south GA clearly identified as unfavorable options to pursue
 - "No support [for desalination] – no way our situation in Georgia requires this measure"
 - "[Septic conversions] too small, too expensive, too disruptive to homeowners"

Contrasting "level of support" with "pursue option anyway" identifies "no regret" and "contingency" options



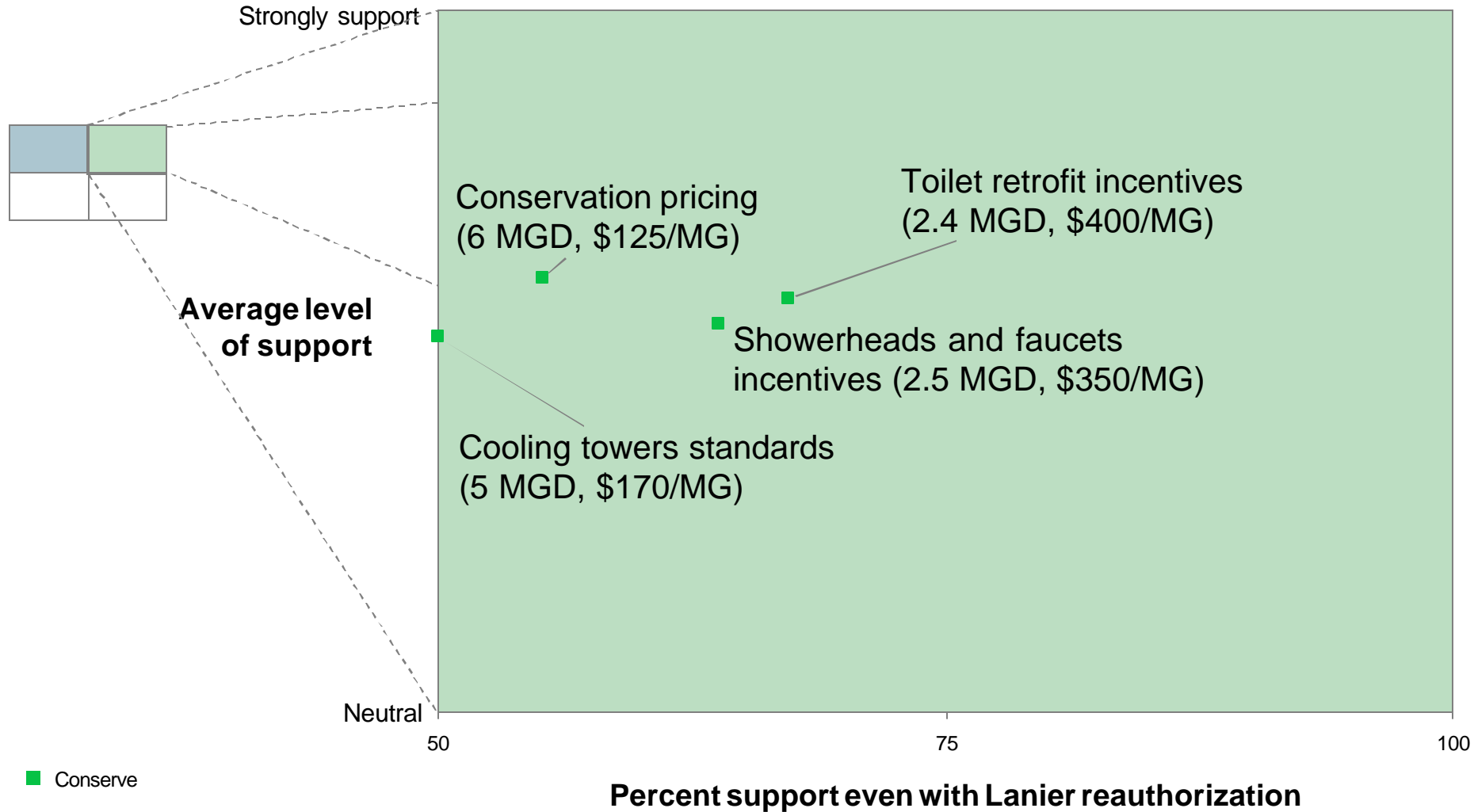
Incentive-based conservation generally viewed "no regret"

Groundwater supply and reservoirs most favorable "contingency" options



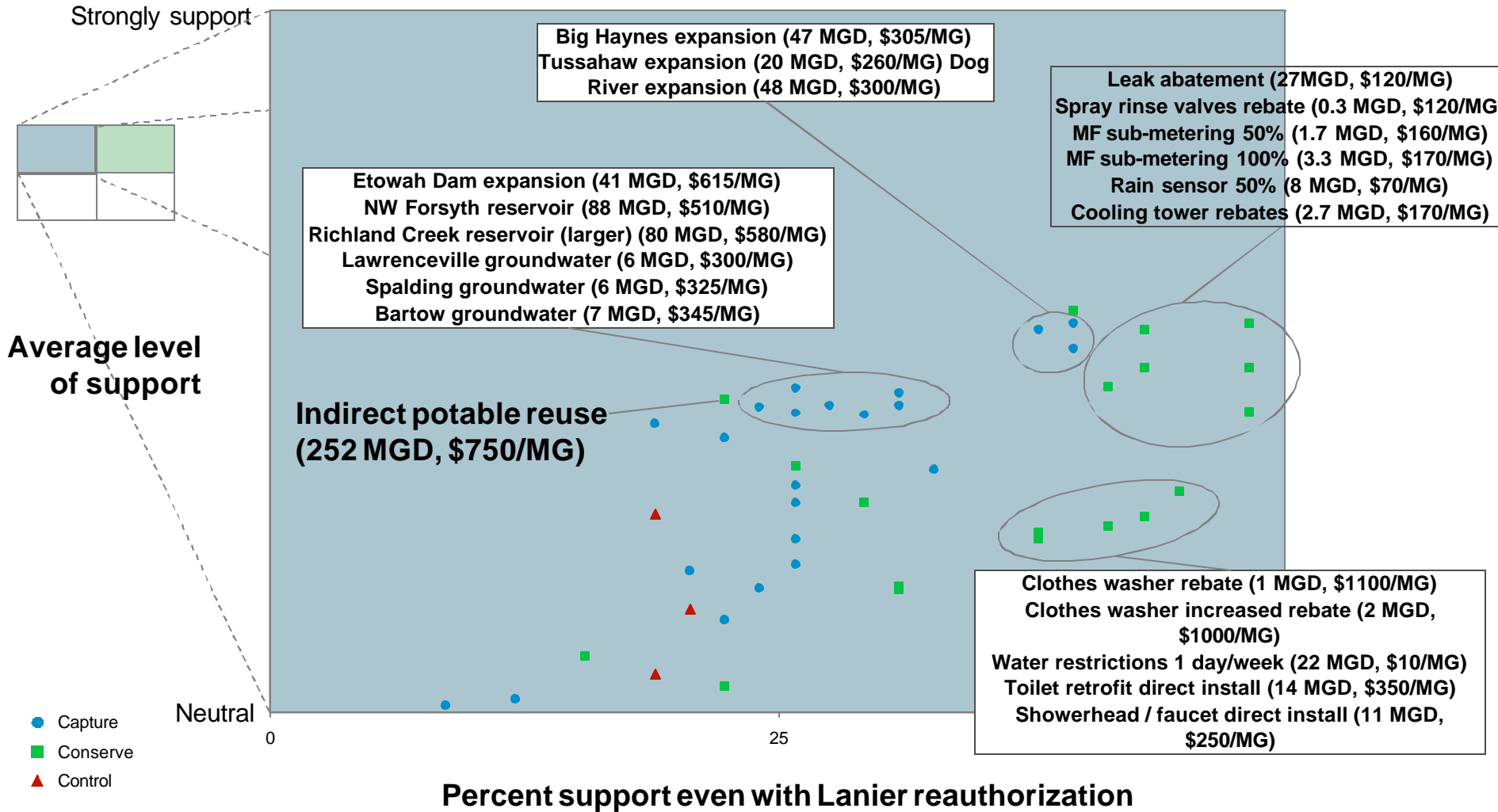
Source: Water Contingency Planning Task Force Survey results, n=64

Incentive-based fixture retrofit and conservation pricing viewed as "no regret" options



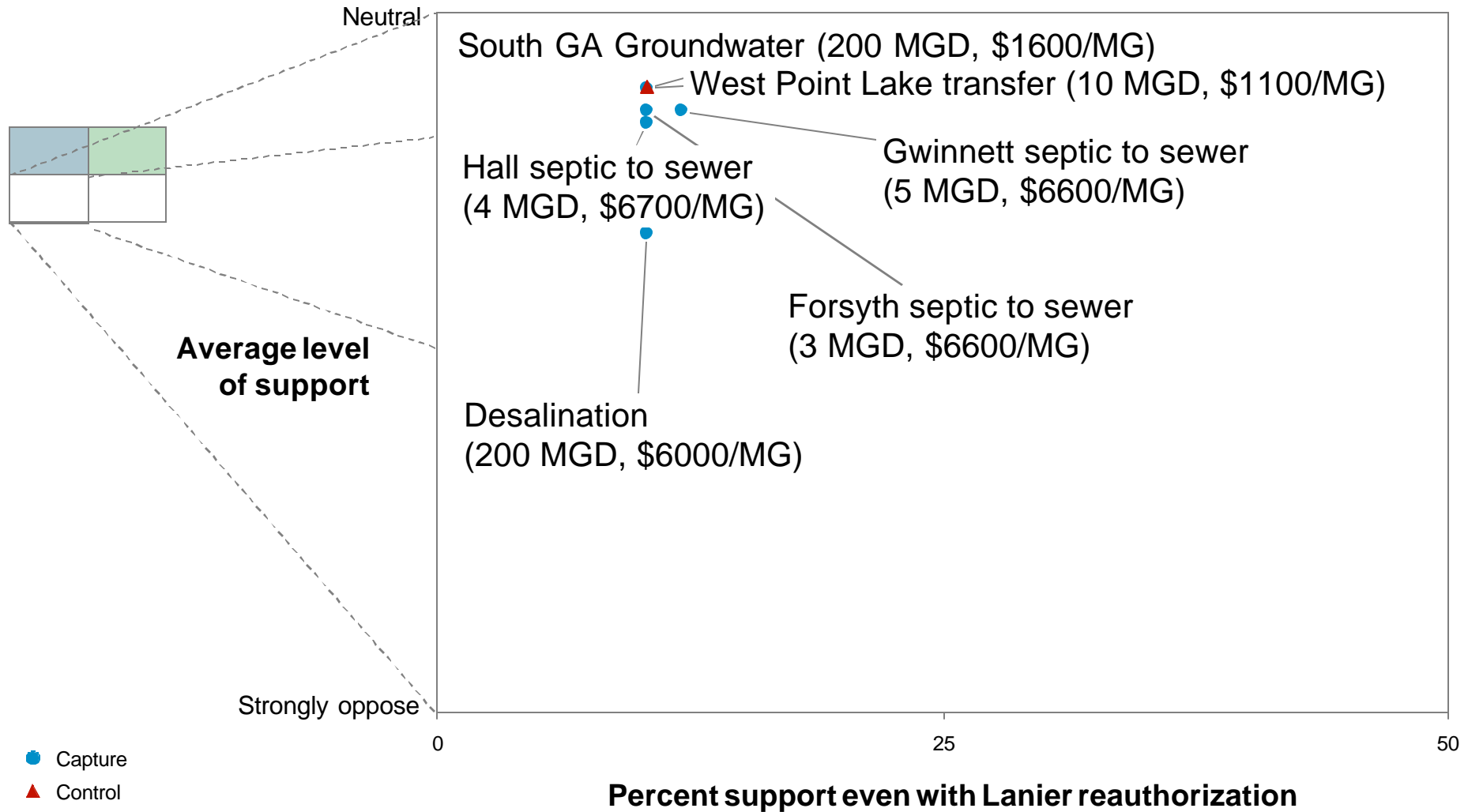
Note: n=64
Source: Water Contingency Planning Task Force Survey results

Following additional conserve measures, reservoirs and groundwater most favored "contingency" options



Note: n=64
 Source: Water Contingency Planning Task Force Survey results

Septic conversions and desalination decidedly "unfavorable" options

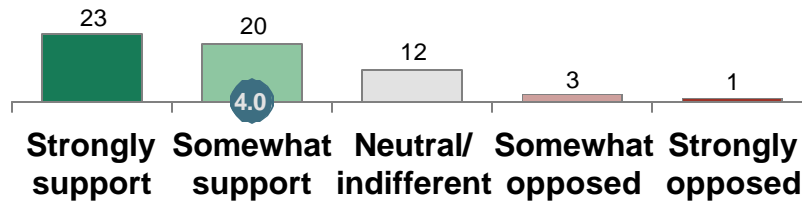


Note: n=64
Source: Water Contingency Planning Task Force Survey results

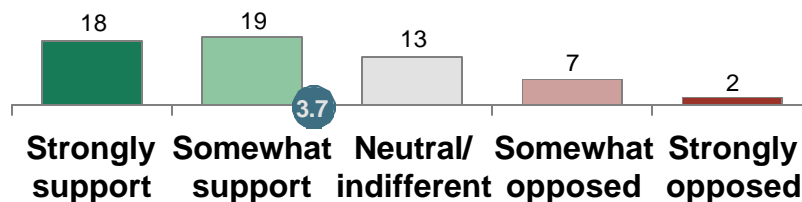
General preference for incentive-based measures, but recognize need for mandates in some instances

Level of support

Incentive driven conserv. options¹



Alternative mandated conserv. options²



xx Mean score

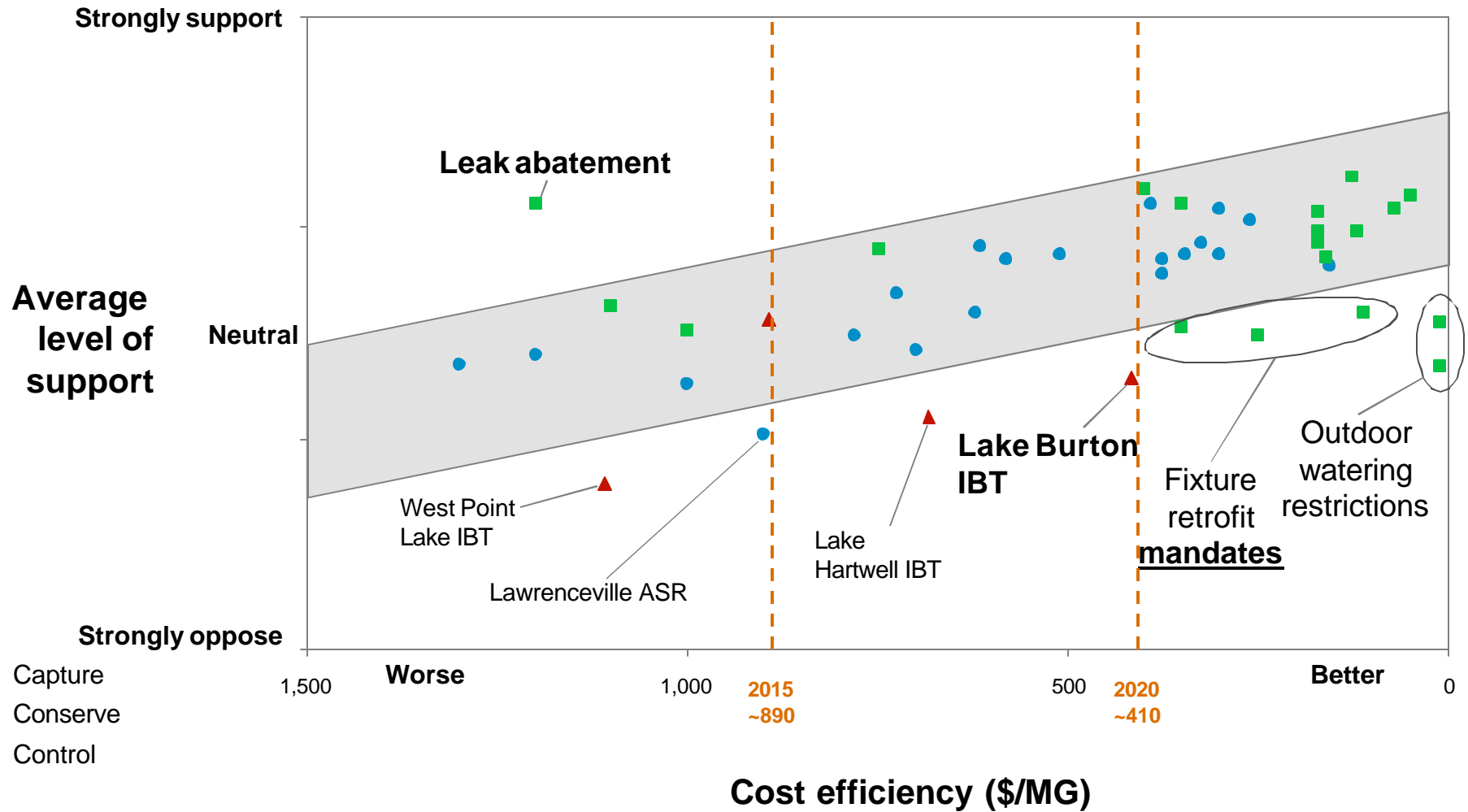
- "Just makes sense in too many ways - we have to go after new technology like this [efficient fixtures]"
- "Consider incentives to local water authorities to encourage local practices"
- "[Mandates] may not go over well, but [they are] decisive and effective"
- "Direct install is the only option that results in substantial water savings"
- "Strongly support if cost is paid by property owner"

1. Includes toilet retrofit incentives, showerhead/faucets incentives, MF sub-metering (50%), spray rinse valve rebates, cooling tower rebates 2. Includes toilet retrofit direct install, showerhead faucets direct install, MF sub-metering (100%), spray rinse valve direct install, cooling tower standards

Note: n=59

Source: Water Contingency Planning Task Force Survey results

Comparison of support vs. relative cost-efficiency can highlight outliers, inform alternate portfolio development



Note: n=64; Only options with cost efficiency <\$1,500/MG shown
 Source: Water Contingency Planning Task Force Survey results, Technical Advisory Panel analysis
 TF Mtg 3-v15 (mainflow only).ppt

Agenda

Addressing the supply shortfall- options and implications

Summary: Task Force Findings (I of II)

Conservation playing a major role for Metro district- low impact, cost-effective

- Only conservation contributes by 2012. Conservation is a necessary, but not sufficient, part of solution
- Metro ATL per capita usage, after considering existing plans combined with TF options reach levels comparable to leading metro areas

Do not see ability to meet gap by 2012- even with extremely aggressive conservation scenarios

There is a potential 2015 contingency solution- though it is very expensive and difficult to implement

- Solution largely defined by large Indirect Potable Reuse option; there is not a broad set of sizable, cost-effective alternatives potentially available by 2015
- Solution capital intensive (\$3B) and overall twice as costly (long term \$/MG) than 2020 solution
 - 2015 average cost efficiency (\$/MG) level of **\$~890/MG**, with capital expense **\$~3.0B**
 - Total 50-yr cost of portfolio is **\$~5.0B** which is significantly higher than 2020 cost optimal portfolio (**\$~480/MG** difference which equates to **\$~2.4B** over 50 yrs)
 - Funding this portfolio could increase overall retail water rates by **~\$2.70/kgall** or **~55%**¹
- Additionally, the Indirect Reuse option poses a number of feasibility questions (timing, funding, environmental impact)

1. Ga Association of Water Professions; assumes incremental portfolio costs borne by utilities (directly or indirectly). Analysis assumes ~\$5/kgall weighted average retail rate baseline.

Summary: Task Force Findings (II of II)

By 2020 a broader set of potential solutions exist, and there are more cost-effective potential solution portfolios

- The theoretical "cost optimal" 2020 portfolio has cost efficiency of **\$~410/MG avg**, with capital expense **\$~2.3B**; equates to **~\$2.6B** over 50 years
- Based on Task Force feedback, Primary and Alternate 2020 portfolios were defined- balancing cost efficiency with concern for environmental impacts and implementation feasibility
 - While there is not consensus, there is general agreement on core set of conservation and capture options. These alternatives differ primarily on the mode of conservation (ie, desired extent of mandates) and the mix of reservoir expansions vs. new builds
 - No Interbasin transfer options are contained in the 2020 alternate portfolios under evaluation. This is based primarily on relative cost effectiveness, as well as on Task Force input and on implementation feasibility

The Task Force is evaluating these alternate portfolios to arrive at a final recommendation

- Task Force members will be asked their degree of support for each portfolio, their conditions/caveats placed upon this support, and they'll have the opportunity to recommend any other options to add/remove

Summary: Task Force Recommendations (I of II)

1. Continue to pursue reauthorization of Lake Lanier

- Aggressively pursue other three prongs of Governor's 4 prong-plan (negotiations, appeal, Congressional action)

2. Pursue aggressive conservation program- in support of current plans and incremental Task Force options. While the Task Force is evaluating the degree of mandates recommended, the specific areas of focus include, at a minimum

- ***Expanded efficiency programs (fixture retrofits, sub-metering, cooling tower standards, etc):*** Georgia Assembly to pass statute that requires local government to create incentive or mandated efficiency programs, AND appropriate funding to help support these programs
- ***More aggressive conservation pricing:*** Enact policies on minimum rate differentials across usage tiers and usage information levels to be provided on bills
- ***More aggressive utility leak abatement programs:*** Pass statute that requires annual water loss audits, loss data reporting to EPD, and leak abatement programs
- ***Time-of-day restrictions on outdoor watering:*** Pass statute that requires outdoor watering restriction of no day-time watering
- ***Funding for conservation education program:*** Appropriate funding for holistic conservation education program
- Evaluate incorporation of conservation plan and efficiency criteria in permitting applications
- Evaluate conservation efficiency criteria in GEFA low-interest loan qualification, and to consider prioritization of SRF Green project reserve funds for these projects

Summary: Task Force Recommendations (II of II)

- 3. Only devote resources towards the 2015 Contingency Solution if outlook on negotiations and reauthorization demands. Metro ATL should only pursue this if required**
 - If 2015 Contingency Solution is deemed necessary, the State must ensure a funding mechanism exists to address joint liability issues.
 - Indirect Potable Reuse project would be so costly and involve so many counties, resolving funding liability issues would be a key challenge
 - Smaller groundwater options included in the 2015 plan should be evaluated by local governments

- 4. If we must pursue a contingency plan, but we are able to pursue a 2020 solution, we recommend initiating feasibility studies and permitting on capture options in the recommended 2020 Portfolio (to be finalized ~15 December)**
 - Confirm yield, cost, and timing estimates. Specifically, incorporate outputs from forthcoming state water plan and EPD hydrology modeling to ensure the portfolio incorporates best available information

Comparison of solution portfolio cost and yield

	2015 portfolio	"Cost optimal" 2020 portfolio	"Primary" 2020 portfolio	"Alternate" 2020 portfolio
Yield (MGD)	~340 MGD	~400 MGD	~370 MGD	~360 MGD
Capex (\$B)	~ \$3.1 B	~ \$2.3 B	~ \$2.0 B	~ \$1.7 B
Cost efficiency (\$/MG)	~\$890 / MG	~\$410 / MG	~\$470 / MG	~\$460 / MG
50-year cost (\$B)	~ \$5.0 B	~ \$2.6 B	~ \$3.0 B	~ \$2.9 B

Recommended options for 2012 contingency plan

Option	Cost Efficiency (\$/MG)	Capital Cost (\$M)	Yield (MGD)
Water restrictions (no daytime watering)	10	0	5
Rain sensors (retrofit 25% existing systems)	60	6	5
Spray rinse valves (rebate program)	115	1	0.7
Conservation pricing	125	14	6
Multi family sub-metering (retrofit 50% existing homes)	165	6	2
Cooling towers (rebate program)	170	6	3
Showerheads and faucets (increased rebate program)	300	8	3
Toilet retrofits (increased rebate program)	375	25	2
Residential clothes washers	1,050	14	0.2
Leak abatement	1,200	17	9
	Wtd. Avg. ~410	~100	~35

Source: Technical Advisor Panel estimates
 Note: Expected 2012 yield shown for conservation options

Recommended options for 2015 contingency plan

Option	Cost Efficiency (\$/MG)	Capital Cost (\$M)	Yield (MGD)
Water restrictions (no daytime watering)	10	0	6
Rain sensors (retrofit 25% existing systems)	60	6	4
Spray rinse valves (rebate program)	115	1	0.5
Conservation pricing	125	14	6
GW for non-potable use	155	8	15
Multi family sub-metering (retrofit 50% existing homes)	165	6	2
Cooling towers (rebate program)	170	6	3
Lawrenceville GW system	300	5	6
Showerheads and faucets (increased rebate program)	300	8	2
Spalding county GW system	325	7	6
Bartow county GW system	345	11	7
Suwanee GW system	375	10	5
Palmetto GW system	375	3	2
Toilet retrofits (increased rebate program)	375	25	2
Lawrenceville ASR	900	19	4
Small Quarry	1,010	95	8
Residential clothes washers	1,050	14	0.4
Indirect potable reuse (6 county)	1,070	2,800	252
	Wtd. Avg. ~890	~3,060	~340

Source: Technical Advisor Panel estimates

Note: Expected 2015 yield shown for conservation options

Detail of options for "Cost optimal" 2020 portfolio

Option	Cost Efficiency (\$/MG)	Capital Cost (\$M)	Yield (MGD)
Water restrictions (no daytime watering)	10	0	7
Rain sensors (retrofit 25% existing systems)	60	6	3
Spray rinse valves (rebate program)	115	1	0.3
Conservation pricing	125	14	6
GW for non-potable use	155	8	15
Multi family sub-metering (retrofit 50% existing homes)	165	6	2
Cooling towers (rebate program)	170	6	3
Tusahaw Creek reservoir expansion	260	64	20
Lawrenceville GW system	300	5	6
Dog river reservoir expansion	300	230	48
Showerheads and faucets (increased rebate program)	300	8	1
Spalding county GW system	325	7	6
Bartow county GW system	345	11	7
Suwanee GW system	375	10	5
Palmetto GW system	375	3	2
Toilet retrofits (increased rebate program)	375	25	1
Big Haynes Creek reservoir expansion	390	270	47
Lake Burton transfer	417	362	50
New reservoir NW of Forsyth	510	660	88
Richland creek reservoir (larger)	580	620	80
	Wtd. Avg. ~410	~2,300	~400

Note: Expected 2020 yield is shown for conservation options
Source: Technical Advisor Panel estimates

Detail of options for "Primary" 2020 Portfolio

Option	Cost efficiency (\$/MG)	Capital cost (\$M)	Yield (MGD)
Water restrictions (no daytime watering)	10	0	7
Rain sensors (retrofit 25% existing systems)	60	6	3
Spray rinse valves (rebate program)	115	1	0.3
Conservation pricing	125	14	6
GW for non-potable use (parks, golf courses, etc)	155	8	15
Multi family sub-metering (retrofit 50% existing homes)	165	6	2
Cooling towers (rebate program)	170	6	3
Tusahaw Creek reservoir expansion	260	64	20
Lawrenceville GW system	300	5	6
Dog river reservoir expansion	300	230	48
Showerheads and faucets (increased rebate program)	300	8	1
Spalding county GW system	325	7	6
Bartow county GW system	345	11	7
Suwanee GW system	375	10	5
Palmetto GW system	375	3	2
Toilet retrofits (increased rebate program)	375	25	1
Big Haynes Creek reservoir expansion	390	270	47
New reservoir NW of Forsyth	510	660	88
Richland creek reservoir (larger)	580	620	80
Leak abatement	1,200	17	27
	Wtd. Avg. ~470	~1,970	~370

Note: Expected 2020 yield is shown for conservation options
Source: Technical Advisor Panel estimates

Detail of options for "Alternate" 2020 portfolio

Option	Cost efficiency (\$/MG)	Capital cost (\$M)	Yield (MGD)
Water restrictions (no daytime watering)	10	0	7
Rain sensors (retrofit 50% existing systems)	70	6	6
Spray rinse valves (direct install program)	110	1	2
Conservation pricing	125	14	6
GW for non-potable use (parks, golf courses, etc)	155	8	15
Multi family sub-metering (retrofit 100% existing units)	170	6	3
Cooling towers (required standards)	170	6	5
Tusahaw Creek reservoir expansion	260	64	20
Lawrenceville GW system	300	5	6
Dog river reservoir expansion	300	230	48
Showerheads and faucets (direct install program)	250	8	10
Spalding county GW system	325	7	6
Bartow county GW system	345	11	7
Suwanee GW system	375	10	5
Palmetto GW system	375	3	2
Toilet retrofits (direct install program)	350	25	15
Big Haynes Creek reservoir expansion	390	270	47
Richland creek reservoir (larger)	580	620	80
Etowah River Dam No. 1 reservoir expansion	615	350	41
Leak abatement	1,200	17	27
	Wtd. Avg. ~460	~1,660	~360

Note: Expected 2020 yield is shown for conservation options
Source: Technical Advisor Panel estimates

Number of considerations impact option feasibility

Options' timing estimates attempt to reflect these challenges, but many uncertainties exist

Significance

Political

- Authorization required
- Legislative change required

- Precede any permitting or construction
- Outcome highly uncertain

Operational

- Permitting required
- EIS required
- Right-of-way required

- Precede construction work
- Outcome not certain- final option cost could vary based on ability to mitigate impacts, obtain easements

Financial

- Possible funding sources
- Joint & severable liability clause required

- Some options qualify for advantageous forms of funding (eg, Federal SRF "Green Project Reserve")
- Options involving multiple counties/require shared liability; more difficult to contract

These considerations, along with Task Force feedback, used to define 2020 solution portfolios

Additionally, assessing downstream impact of option implementation is a key feasibility consideration

Options in consideration have varying degree of impact to downstream water availability

- Conservation efficiency measures result in increased downstream flow
- Indirect potable reuse likely to have minimal downstream flow impact – reduced raw water withdrawal would largely offset reuse of wastewater discharge
- Capture measures result in reduced downstream flow – degree of impact is very case specific
- Transfer measures could benefit some downstream users at the expense of others – specific impact depends on location/degree of return flows

Relevant flow/quality requirements are built into option cost and yield estimates

- Assume EPD minimum instream flow standards, quality standards - as well as standards from US Fish and Wildlife, EPA, National Marine Fisheries would have to be met to obtain permits; TAP modeled hydrology to approximate these standards
- Project cost estimates include standard provisions for environmental mitigation

Detailed analysis of net downstream impact would require longer timeframes and case-specific modeling; these analyses are not in the scope of the Task Force effort

- Account for net impact of a set of options chosen for implementation, along with option specific implementation guidelines
- Account for decreased withdrawals from Lanier and Chattahoochee per Magnuson's order

Agenda

Solution portfolios- options and implications

- 2012 Challenge and the role of conservation

Only conservation measures could provide meaningful yield by 2012

Type of measure

Impact by 2012

Conserve

Some impact by 2012

- Many measures require adoption and behavior change; only some savings available in 2-3 years
- Outdoor watering restrictions are quickest lever

Capture

Control

No impact by 2012

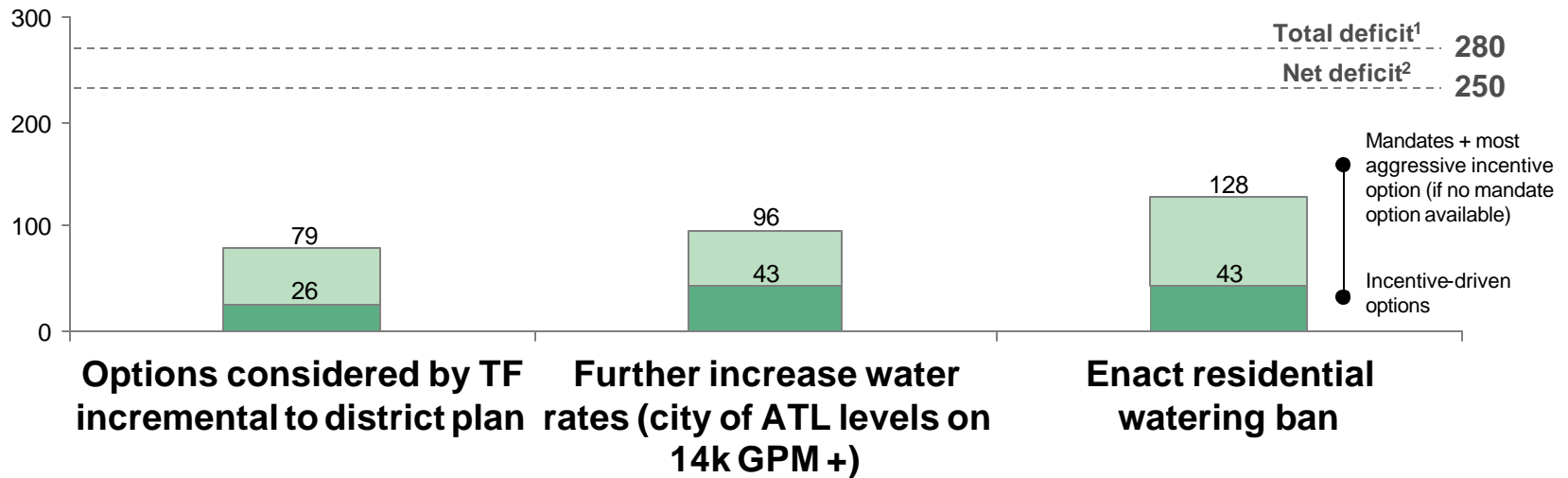
- Significant (often 2-4 years) pre-construction work (permitting, environmental impact studies)
- Construction time

Transfers face additional approval challenges- authorizations, legislative changes required

Do not see ability to close supply gap in 2012

Even drought-level outdoor watering restriction not enough

Potential water savings in 2012³ (MGD)



- Retrofit of 1.28 gpf toilets
- Efficient showerheads, faucet aerators, clothes washers
- Sub-metering of all existing multi-family buildings
- One day per week watering schedule

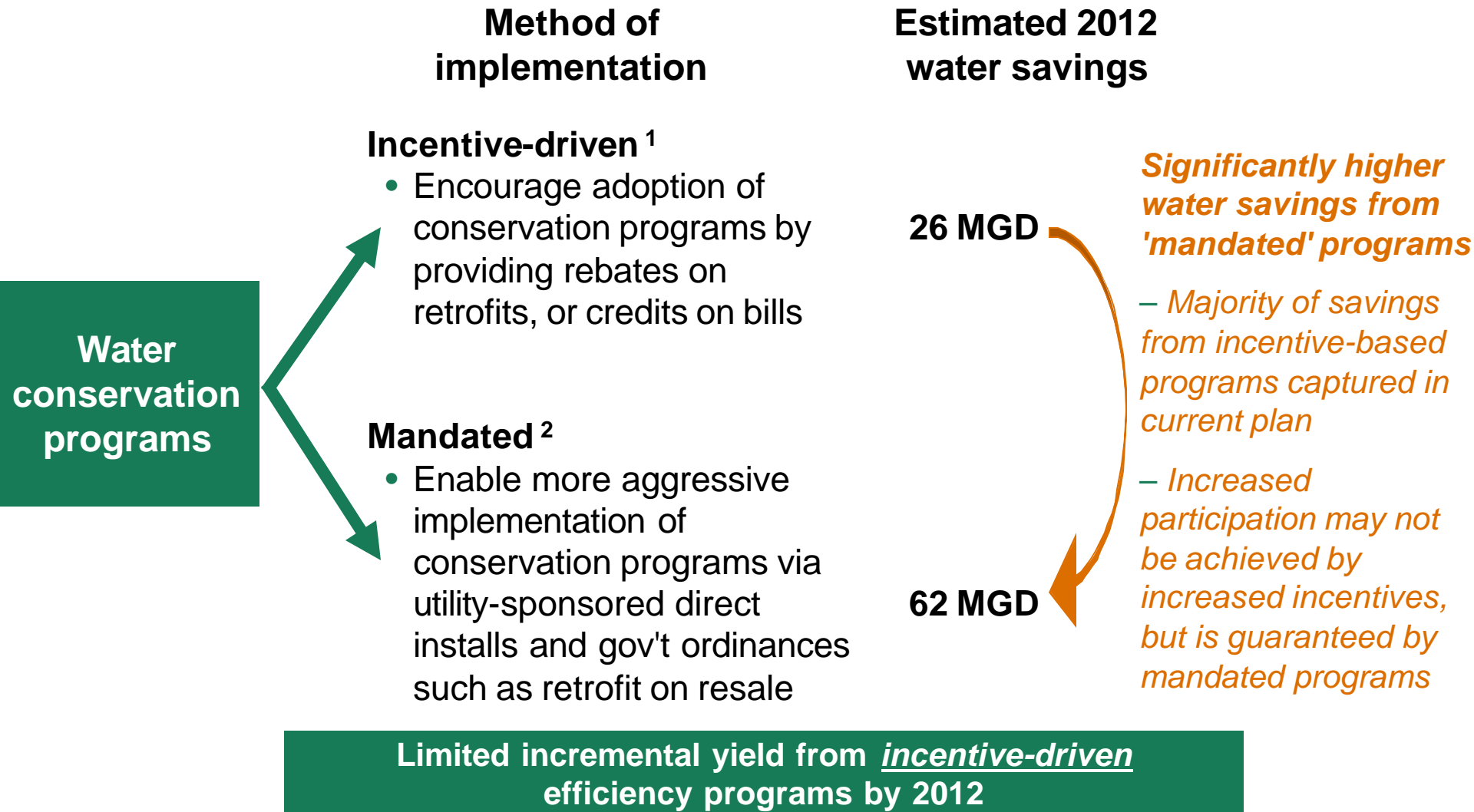
- Metro district utilities raise their marginal price at a consumption of 14K GPM, to match that of city of Atlanta
- Under this scenario, implied wtd. avg. price increase is ~152%

- Ban on all outdoor residential water usage, as seen during Level IV drought response in 2007 and 2008

Aggressive conservation critical element of any plan – but not sufficient to close gap

1. Total deficit = total shortfall in 15 county Metro Area per EPD analysis, deficits already assume realization of 21MGD water savings per current district plan (May 09) 2. Net deficit = net shortfall for 15 county Metro Area per EPD analysis, deficits already assume realization of 21MGD water savings per current district plan (May 09) 3. Savings do not include projected savings assumed in the District Plan, solely additional savings considered by TF Source: Metro North Georgia Water Planning District- May 09 Plan, GA EPD; Technical Advisory Panel analysis

Mandate-driven conservation programs needed to realize significant savings incremental to existing plans



1. Toilet rebate: 3MGD, showerhead/faucet: 2.5MGD, clothes washers: 1MGD, submetering: 2MGD, spray rinse valves: 1MGD, cooling towers: 3MGD, rain sensor: 8MGD, pricing: 7MGD
2. Toilet direct install: 16MGD, showerhead/faucet: 11MGD, submetering: 3MGD, spray rinse valves: 2MGD, cooling towers: 5MGD, 1 day/week watering: 15 MGD, loss reduction: 10 MGD
Source: Technical Advisory Panel analysis
TF Mtg 3-v15 (mainflow only).ppt

Conservation playing a major role in Metro District

Must consider Task Force options + existing plans

Outdoor conservation: 10-23 MGD
Pricing: 4-7 MGD
Total outdoor: 14-30 MGD

Projected savings in 2012

	Outdoor usage	Indoor conservation	Loss reduction	Indoor cons. + loss reduc.	Total
Incremental savings (Task Force options)	14-30 MGD	10-39 MGD	8-10 MGD	18-49 MGD	32-79 MGD
District plan savings	3 MGD ¹	← 18 MGD →		18 MGD	21 MGD
Total	17-33 MGD	28-57 MGD	8-10 MGD	36-67 MGD	53-100 MGD

Outdoor conservation: 10-27 MGD
Pricing: 4-7 MGD
Total outdoor: 14-34 MGD

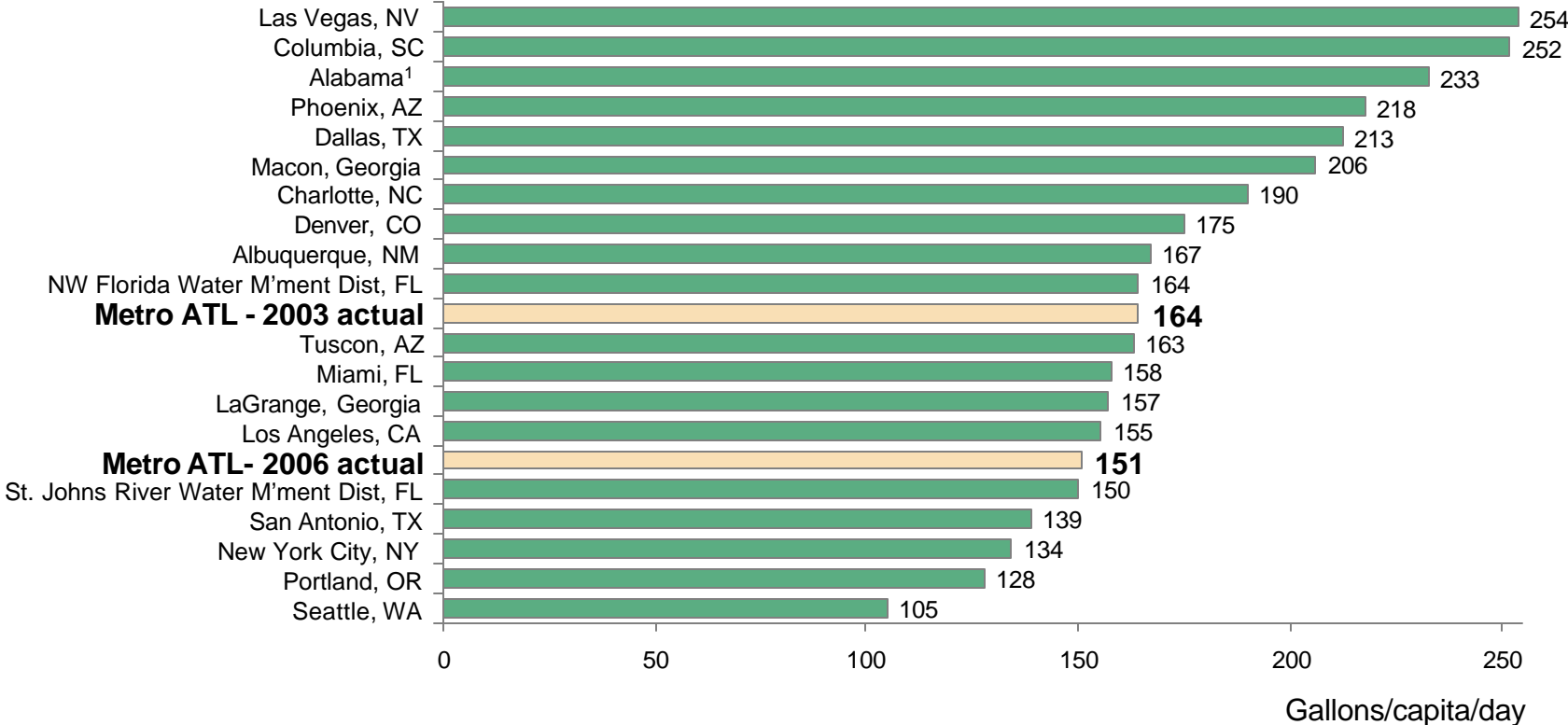
Projected savings in 2035

	Outdoor usage	Indoor conservation	Loss reduction	Indoor cons. + loss reduc.	Total
Incremental savings (TF)	14-34 MGD	8-38 MGD	27 MGD	35-65 MGD	49-99 MGD
District plan savings	14 MGD	39.5 MGD	35.5 MGD	75 MGD	89 MGD
Total	28-48 MGD	47.5-77.5 MGD	62.5 MGD	110-140 MGD	138-188 MGD

1. Outdoor conservation programs in district plan provides 15.5% of total conservation water savings
Source: Metro North Georgia Water Planning District- May 09 Plan, Technical Advisory Panel analysis
TF Mtg 3-v15 (mainflow only).ppt

Overall District water usage levels projected to be similar to those seen in low-usage metro areas

Per capita public supply use, by metro areas— showing Metro ATL 2003 and 2006 actual usages



Realization of this requires continuous improvement and ongoing education- fostering a "conserve first" mindset

1. State average; data not available for individual cities in AL
 Note: Overall per capita is calculated by dividing total gallons of water produced by water provider by the population served, where total gallons of water produced includes use for residential, commercial, industrial, irrigation, and non-revenue water
 Source: Georgia EPD analysis with data collected from 2000 - 2008

Robust education and public outreach program critical element to a successful conservation program



Texas Water Development Board conservation program includes a statewide water conservation public awareness campaign "Water IQ: Know your water" developed in 2004

- Research study¹ shows that 87% of Texans are more likely to conserve water after learning more about water conservation and hearing ideas about ways to save water

North Texas Municipal Water District², the first entity to implement the Water IQ program in the state in June 2006, saw significant results from campaign

- Achieved annualized 10-12% reduction in usage during 2006-2007 drought³
- Endured drought via combination of education campaign and Stage 3 drought response measures (eg. 1 day/week watering schedule), without resorting to Stage 4 drought response measures (eg. outdoor water ban)



Even with additional \$4M expenditure⁴ on education over 3-year effort (equivalent to additional cost of \$50-\$100/MG water saved via conservation), conservation programs still highly cost effective

1. 2004 Texas Water Development Board "Water IQ" campaign research study 2. NTMWD serves ~1.6 million people, including 13 member cities and 3/49 customers 3. 2006-2007 North Texas Municipal Water District annual report 4. Average cost of ~\$1/person estimated from "I'm IN" Metro District mass-media campaign developed by Grey Advertising Source: Texas Water Development Board, North Texas Municipal Water District, Water IQ website (wateriq.org), "I'm IN" campaign (Metro District and ARC), Georgia EPD

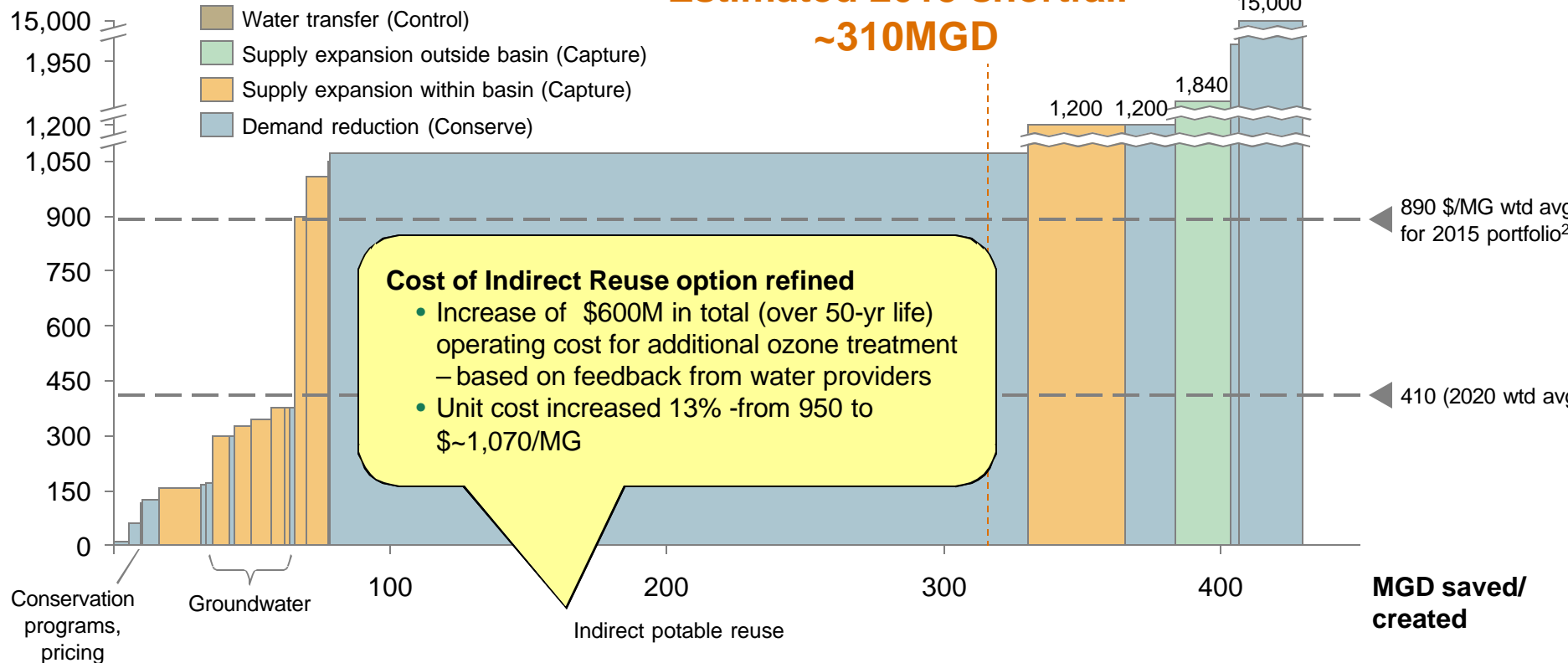
Agenda

Solution portfolios- options and implications

- 2015 portfolio

By 2015, shortfall can be addressed largely through indirect potable reuse, at ~890 \$/MG

Unit cost of savings (\$/MG)



1. Shortfall = Projected 2015 demand with conserv. in Metro plan – Estimated 2015 supply (Lanier and Chatt. withdrawals per ruling, all other sources at current levels). Assumes demand continues to grow until year of shortfall. Other approaches could assume demand decreases as result of ruling, thus reducing implied gap. This analysis uses existing plan demand as baseline. Shortfall only accounts for counties with deficit under ruling. 2. Weighted average \$/MG calculated based on options that can address 2015 gap at lowest cost
 Certain option yields may not be additive due to interaction effects
 Source: Technical Advisor Panel preliminary estimates

A number of feasibility considerations surround Indirect Potable Reuse option

Types of considerations

Timing

- Need for technical design / optimization
- Chance of delays in permitting and obtaining easements

Funding

- Magnitude of capital requirements (~\$2.8B)
- Potential difficulty of developing joint and severable liability (many entities involved in project, very high stakes)
- Degree of water treatment required, and degree of public acceptance

Environmental / impacts

- Potential impact on water quality, temperature (and/or costs to mitigate these potential impacts)

While this option appears to represent the best solution to 2015 shortfall, it is costly and raises number of questions

Addressing potential shortfall could have significant impact on water rates if utilities bore costs (I of II)

Addressing potential shortfall using the most cost-efficient option portfolio ...

... by 2015

... by 2020

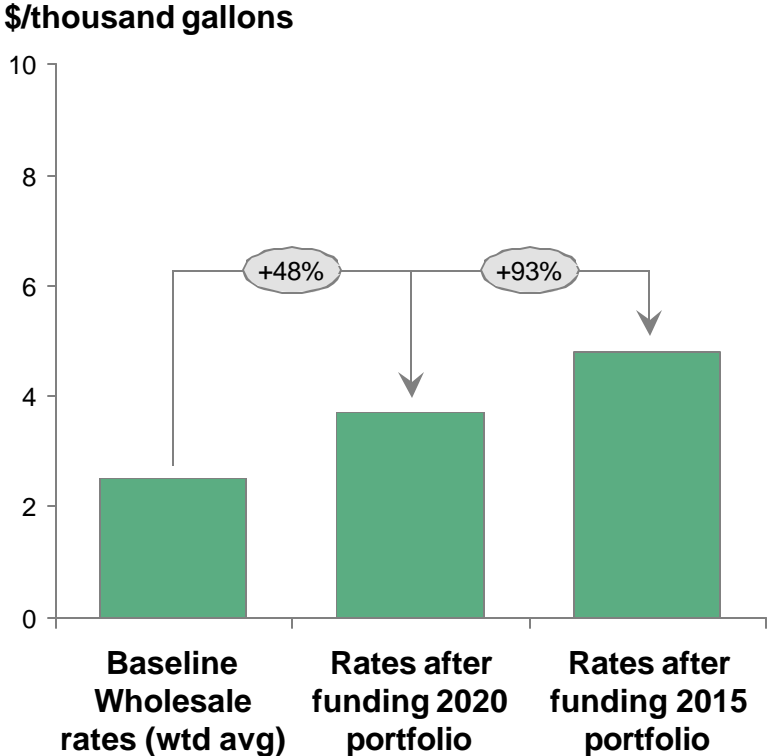
	... by 2015 by 2020	
Costs to fill gap	Capital cost (\$M)	~3,000	~2,300	
	Annual operating cost (\$M)	~80	~12	
	Cost efficiency (\$/MG)	~890	← ~2x →	~410
Potential impact on <u>wholesale</u> water rates	Incremental cost (\$/MG)	~2,330	← ~2x →	~1,200
	Percentage price increase ¹	93%		48%
Potential impact on <u>retail</u> water rates	Incremental cost (\$/MG)	~2,680	← ~2x →	~1,380
	Percentage price increase ²	54%		28%

If forced to replace Lanier as source, we fundamentally will pay more for less water

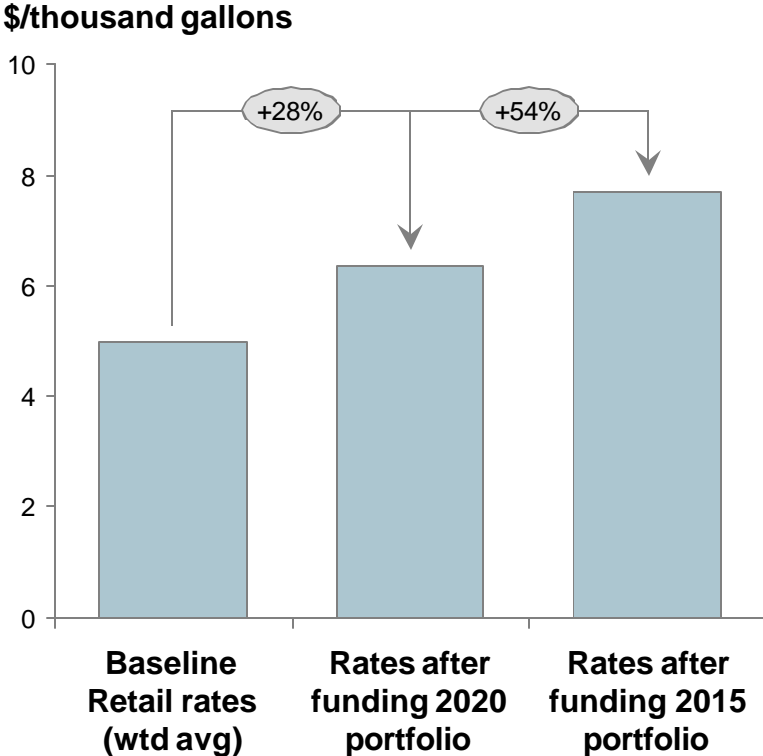
1. Assuming current avg. wholesale rate of \$2,500/MG 2. Assuming current avg. retail rate of \$5,000/MG; Potential rounding errors
Key assumptions: Incremental cost based on annual cash needs of utilities (debt servicing + operating expense); Capital cost is entirely financed with debt - 30 year term, 4.5% average interest rate; 15% increase to incremental wholesale cost when passed on to retail, to account for non revenue water Source: Technical Advisor Panel Analysis

Addressing potential shortfall could have significant impact on water rates if utilities bore costs (II of II)

**Wholesale rate potential impact:
~50 – 90% increase**



**Retail rate potential impact:
~30 – 55% increase**



Replacing Lanier withdrawals would pose significant incremental costs to water providers, which would pass thru to consumers

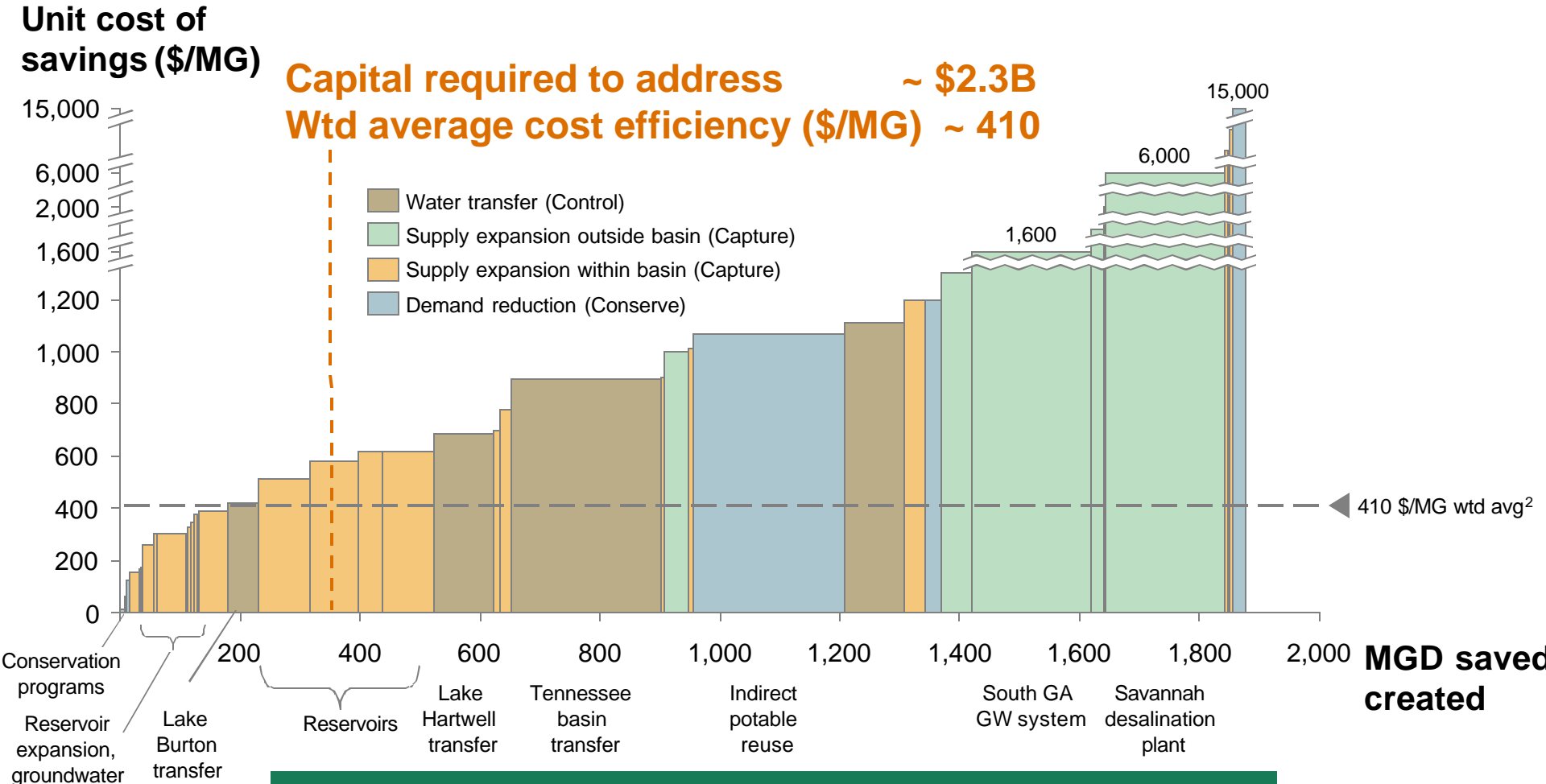
Agenda

Solution portfolios- options and implications

- 2020 portfolio options

Recap: 2020 solution view, ranked by cost efficiency

Once supply options come online, they offer long-term cost efficiency (for \$~2.3B Capital cost)

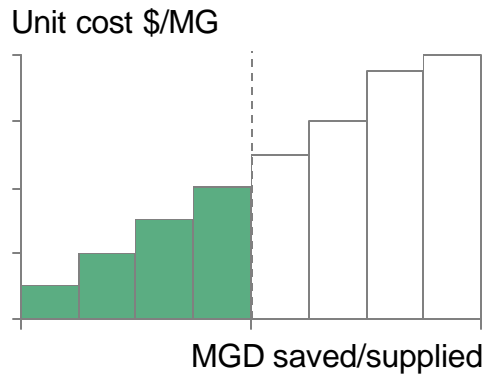


This is one view— there are more ways to prioritize than by long-term cost efficiency

Source: Technical Advisor Panel preliminary estimates

How do we arrive at current 2020 "Primary" and "Alternate" portfolios?

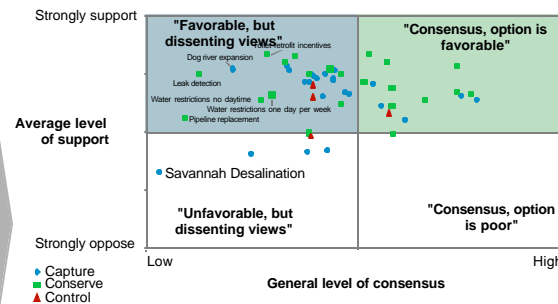
Starting point: "cost optimal" portfolio



- Long list of options generated (TF input, interviews/research)
- Cost, yield "and timing" estimates by technical advisors and water professionals

Applied additional considerations

- Task Force survey ratings and comments



- Implementation feasibility
 - Authorizations?
 - Legislative changes?
 - Permitting?
 - Funding flexibility?

Identified portfolios for final evaluation

- Reflect Task Force input
- Attempt to address gap while balancing costs, feasibility, impacts



- 1 "Primary" 2020 portfolio
- 2 "Alternate" 2020 portfolio

Primary and Alternate 2020 portfolios defined based on feasibility and task force feedback

**Baseline:
"cost optimal"
Portfolio**

**"Primary" 2020
Portfolio**

**"Alternate" 2020
Portfolio**

Premise

The most cost effective set of options that address potential 2020 shortfall

Enhance implementation feasibility (minimize legislative changes needed) and include highly endorsed leak abatement option

Increase conservation potential and prioritize reservoir expansions over new builds (reducing environmental impact)

Changes to cost-optimal portfolio

- + Leak abatement
- Lake Burton transfer

- + Most aggressive retrofit/efficiency program implementation¹
- + Leak abatement
- + Etowah river dam no. 1 expansion
- Lake Burton transfer
- New reservoir NW of Forsyth

- + Option added
- Option removed

1. Direct install options: toilet retrofits, showerheads and faucets, multi-family sub-metering, spray rinse valves; Increased incentive options: rain sensors, cooling towers

Primary and Alternate 2020 portfolios have similar cost efficiency; key tradeoff is accepting conserv. mandates

Baseline: "cost optimal" Portfolio "Primary" 2020 Portfolio "Alternate" 2020 Portfolio

Yield (MGD)	~400	~370	~360
Cost efficiency (\$/MG)	~410	~470	~460
Capital cost (\$M)	~2,300	~1,970	~1,660
Total 50-yr cost ¹ (\$M)	~2,620	~3,000	~2,940

+15% (Baseline to Primary)
 +12% (Primary to Alternate)
 +\$380M (Baseline to Primary)
 +\$320M (Primary to Alternate)

We'll ask your feedback on these alternates. Please offer your relative prioritization and any other suggestions

1. portfolio cost efficiency (\$/MG) * potential 2020 shortfall (350 MGD) * 365 * project life for portfolio options (50 years) – accounts for capital expense and operating expenses over 50 years
 TF Mtg 3-v15 (mainflow only).ppt

Agenda

Next steps

In addition to prioritized option sets, Task Force will forward selected policies/measures for consideration

What Task Force will deliver...

1 Prioritized set of options

- Estimates of cost, yield, timing
- Summary of feasibility considerations
- Task Force feedback
 - Degree of support (with and without reauthorization)
 - Comments- caveats and conditions for support
 - Summary of dissenting views
 - TF member submissions / official statements

2 Set of policies or measures which support these options

- Based on input from Task Force members, other interested parties, observations of best-practice in other regions
- Emphasis on governance, data quality/metrics/tracking, enablers to implement options
- Purpose is to inform policy makers, highlight key issues for consideration
 - NOT legislation
 - NOT fully defined proposals

Supporting policies/actions for consideration

Not exhaustive - final set to include additional categories and policies/actions

Loss reduction

Every water utility to conduct water loss assessments to IWA/AWWA¹ standards

- Audits would improve consistency of non-revenue loss data and terminology, and enable better comparison of this benchmark across utilities and over time to assess progress

State government to develop a funding program to provide financial assistance to water utilities for capital-intensive projects

- Prioritize use of Clean Water and Drinking Water State Revolving Funds for projects that reduce water loss

Conservation pricing

Every water utility to follow EPD policies that set effective residential conservation rates

- Absolute prices at key consumption levels must be comparable to peers in the rest of the Metro district, while accounting for customer affordability
- Volumetric tier endpoints must be consistent with consumer consumption pattern
- Price differential across tiers must be significant, eg. tier 1 price at least 50% above base tier price, tier 2 price at least 250% of base tier price

Once more, we'll be collecting your feedback

Intent is to gather Task Force member feedback on alternate solution portfolios

- Short, 1 page, 10 minute survey

Focus is on assessing alternate 2020 solution sets

Key questions

- Regarding the 2020 Portfolios (Cost optimized ; Primary ; Alternate):

1) *What is your level of support? (5-point scale)*

2) *What would you change (ie, any options you'd add/swap in, remove)?*

**Survey will be sent today- we ask for feedback
by 11:59 PM, 15 December**

Moving from Task Force outputs to final deliverable

After we collect your feedback, we will finalize the recommended 2020 Contingency Portfolio

Your comments regarding conditions for approval and caveats will be consolidated and included in the final recommendations

Your suggestions regarding other options to pursue / alternate portfolios will also be included

All formal comments and submissions will be presented as well

- "Dissenting" views will be presented, both in verbatim form (in appendices) as well as in summary form in main conclusions

Commentary / Feedback
