



Region C Water Planning Group Meeting

TRA Central
Wastewater Treatment Plant
March 15, 2005

Agenda

- Action Items
 - Available supplies to wholesale water providers and water user groups
 - Available potentially feasible water management strategy
 - Additional wholesale water providers
 - Infrastructure financing survey

Action Item

Available Supplies to WWPs/WUGs

Available Supplies

– Adjustments to Source Supplies

- Not using Red River WAM for surface water supplies in Red River Basin
 - 2001 Plan estimates for reservoirs
 - 100% of permitted diversion for run-of-river on Red River
 - 75% of permitted diversion for run-of-river on tributaries
- Updated Supplies from Other Aquifer based on recent data
- Updated distribution of groundwater supplies by basin, based on recent data
- Included Local Mining supplies to reflect current use

Available Supplies

- Adjustments to supplies to Water User Groups
 - Adjusted supplies to some customers of wholesale water providers after meetings with providers
 - Minor corrections, including well locations, contract changes, etc.

Action Item

Additional Potentially Feasible
Water Management Strategy

Potentially Feasible Water Management Strategy

- 2/15/05 DWU submitted request to add Lake Fastrill to the list of potentially feasible water management strategies in Region C
- Proposed Lake Fastrill is part of DWU's long-range water supply plan

Proposed Lake Fastrill

- Located in Neches Basin
- Upper Neches River MWA approached DWU about project
- 20 miles downstream of Lake Palestine
- 100 miles southeast of Dallas
- Proposal to provide 80% of firm yield to Dallas and leave 20% for local use

Proposed Lake Fastrill

- Considerations
 - Limited data available on this site.
 - Could be pumped to Lake Palestine and brought back to Dallas in a larger Lake Palestine pipe
 - Private group seeking to designate the Neches River as Wild and Scenic
 - U.S. Fish & Wildlife Service is studying wildlife refuge in the site

Action Item

Additional Wholesale Water
Providers

Additional Wholesale Providers

- Definition: any entity who has sold or is expected to sell 1,000 acre-feet per year of water wholesale during the planning period
- City of Gainesville – Cooke County surface water project
- Mustang SUD – increasing sales
- Walnut Creek SUD – increasing sales

Additional Wholesale Providers

- RCWPG Action
 - Add City of Gainesville, Mustang SUD, and Walnut Creek SUD as WWPs

Action Item

Infrastructure Financing Survey

Infrastructure Financing Survey

- Survey broken into two parts
 - Questions regarding recommended water management strategies (WUG/WWP in agreement with recommendations?)
 - Questions as to how the WUG/WWP plans to fund the recommended water management strategies (TWDB questions from last time)
- Attachment explaining the State Participation Program
- TWDB did not have specific questions to include

Infrastructure Financing Survey

- Schedule
 - Sent revised questions and cover letter to RCWPG last week.
 - Today, seeking RCWPG approval to send to WUGs/WWPs.
 - Mail surveys in March. Allow 2 weeks to respond.
 - Follow-up phone calls in April.
 - Incorporate results into Region C plan.

Agenda

- Discussion Items
 - Water Conservation
 - Summary of Water Needs
 - Feasible Water Management Strategies
 - Report from Unique Stream Segments Committee
 - Report from Policy Topics Committee

Agenda (continued)

- Communications
- Speaker Comments at 1-15-05 meeting
- Update on Overall Status and Next Steps

Discussion Item

Water Conservation

Model Water Conservation and Drought Contingency Plans

Model Water Conservation and Drought Contingency Plans

- User Groups
 - Municipal
 - Irrigation
 - Manufacturing
 - Steam Electric Power
- Model plans for fictional entities with realistic water supply situations
- Posted on Region C web site:
www.regioncwater.org

Model Municipal Plan

- Minimum required water conservation content (TCEQ Rules)
 - Utility profile
 - Specification of goals
 - Accurate metering
 - Universal metering
 - Determination and control of unaccounted water
 - Public education and information program
 - Non-promotional water rate structure
 - Reservoir system operation plan
 - Means of implementation and enforcement
 - Coordination with Regional Water Planning Group

Model Municipal Plan

- Additional required water conservation content for public drinking water suppliers projected to serve 5,000 people or more in the next ten years
 - Leak detection, repair, and water loss accounting
 - Record management system
 - Requirement for water conservation plans by wholesale customers

Model Municipal Plan

- Optional water conservation content
 - Possibilities from TCEQ
 - Conservation-oriented water rates
 - Ordinances, plumbing codes, or rules on water-conserving fixtures
 - Programs for replacement or retrofit of water-conserving fixtures in existing structures
 - Reuse and recycling of wastewater
 - Pressure control and/or reduction
 - Landscape water management ordinance
 - Monitoring method

Model Municipal Plan

- Optional water conservation content (continued)
 - Other Region C potentially feasible strategies
 - Residential customer water audit
 - Water-efficient clothes washer rebate program
 - Impact of increasing water prices
 - Landscape irrigation system rebate program
 - Landscape design and conversion program
 - General ICI rebate program
 - ICI water audit, water waste reduction, and site-specific water conservation program

Model Municipal Plan

- Minimum drought contingency content (TCEQ Rules)
 - Provisions to inform the public and provide opportunity for public input
 - Provisions for continuing public education and information
 - Coordination with Regional Water Planning Group
 - Criteria for initiation and termination of drought stages
 - Drought and emergency response stages
 - Specific, quantified targets for water use reductions
 - Water supply and demand management measures for each stage
 - Procedures for initiation and termination of drought stages
 - Procedures for granting variances
 - Procedures for enforcement of mandatory restrictions
 - Consultation with wholesale water suppliers
 - Notification of implementation of mandatory measures
 - Review and update of plan

Model Irrigation Plan

- Minimum required water conservation content (TCEQ Rules)
 - Description of irrigation production process
 - Description of the irrigation method or system and equipment
 - Accurate metering
 - Specification of goals
 - Description of water-conserving irrigation equipment and application system
 - Leak detection, repair, and water-loss control
 - Irrigation timing and/or measuring the amount of water applied
 - Land improvements for retaining or reducing runoff and increasing the infiltration of rain and irrigation water
 - Tailwater recovery and reuse
 - Other conservation practices, methods, or techniques

Model Irrigation Plan

- Minimum drought contingency content (TCEQ Rules)
 - Provisions to inform the public and provide opportunity for public input
 - Coordination with Regional Water Planning Group
 - Criteria for initiation and termination of drought stages
 - Specific, quantified targets for water use reductions
 - Procedures for determining the allocation of irrigation supplies to individual users
 - Procedures for initiation and termination of drought stages
 - Procedures for use accounting
 - Procedures for transfer of water allocations among individual users
 - Procedures for enforcement of water allocation policies
 - Consultation with wholesale supplier
 - Protection of public water supplies
 - Review and update of plan

Model Manufacturing and Steam Electric Power Plans

- Minimum required water conservation content (TCEQ Rules)
 - Description of water use in the production process
 - Specification of goals
 - Accurate metering
 - Leak detection, repair, and water-loss accounting
 - Water use efficiency process and/or equipment upgrades
 - Other conservation practices
 - Review and update of plan
- No required drought contingency content

Water Conservation Recommendations

Water Conservation Recommendations

- Review selection of potentially feasible strategies
- Identify potentially feasible strategies
- Recommended strategies, savings goals, and timelines

Selection of Potentially Feasible Water Conservation Strategies

- RCWPG approved screening methodology in March 2004
 - Potentially feasible water conservation strategies must:
 - Have an identified sponsor or authority
 - Consider the end use of water
 - Meet existing federal and state regulations
 - Be based on proven technology
 - Be able to be implemented
 - Be appropriate for regional planning

Selection of Potentially Feasible Water Conservation Strategies

- Applied screening methodology to water conservation strategies in Water Conservation Implementation Task Force Best Management Practices Guide
 - Municipal BMPs
 - Industrial BMPs
 - Agricultural BMPs

Municipal BMPs

Strategy	Potentially Feasible?	If Not, Why?
System Water Audit and Water Loss Prevention	Yes	
Water Conservation Pricing	Yes	
Prohibition on Wasting Water	Yes	
Showerhead, Aerator, and Toilet Flapper Retrofit	Yes	
Residential Toilet Replacement Programs	Yes	
Residential Clothes Washer Incentive Program	Yes	
School Education	Yes	

Municipal BMPs

Strategy	Potentially Feasible?	If Not, Why?
Water Survey for Single-Family and Multi-Family Customers	Yes	
Landscape Irrigation Conservation and Incentives	Yes	
Water Wise Landscape Design and Conversion Programs	Yes	
Athletic Field Conservation	Yes, but...	Insufficient data to estimate potential savings
Golf Course Conservation	Yes	
Metering of All New Connections and Retrofit of Existing Connections	No	Already implemented. Few unmetered connections in Region C.

Municipal BMPs

Strategy	Potentially Feasible?	If Not, Why?
Wholesale Agency Assistance Programs	No	No direct savings. This is a potential funding source, not a conservation method.
Conservation Coordinator	No	No direct savings. Overhead included in other conservation methods.
Water Reuse	Yes	
Public Information	Yes	
Rainwater Harvesting and Condensate Reuse	No	Limited public participation and relatively high cost.
New Construction Graywater	No	Limited public participation and relatively high cost.
Park Conservation	Yes, but...	Insufficient data to estimate potential savings

Municipal BMPs

Strategy	Potentially Feasible?	If Not, Why?
Conservation Programs for Industrial, Commercial, and Institutional Accounts	Yes	
Federal Residential Clothes Washer Standards	Yes	

Industrial BMPs

Strategy	Potentially Feasible?	If Not, Why?
Industrial Water Audit	No	<p data-bbox="1213 623 1724 727">No identified sponsor or authority.</p> <p data-bbox="1213 818 1822 1149">These strategies are included as elements of potentially feasible municipal strategies for ICI accounts and wholesale sales to manufacturers.</p>
Industrial Water Waste Reduction		
Industrial Submetering		
Cooling Towers		
Cooling Systems (other than Cooling Towers)		
Industrial Alternative Sources and Reuse of Process Water		
Rinsing/Cleaning		
Water Treatment		

Industrial BMPs

Strategy	Potentially Feasible?	If Not, Why?
Boiler and Steam Systems	No	<p>No identified sponsor or authority.</p> <p>These strategies are included as elements of potentially feasible municipal strategies for ICI accounts and wholesale sales to manufacturers.</p>
Refrigeration (including Chilled Water)		
Once-Through Cooling		
Management and Employee Programs		
Industrial Landscape		
Industrial Site-Specific Conservation		

Agricultural BMPs

Strategy	Potentially Feasible?	If Not, Why?
Irrigation Scheduling	No	<p data-bbox="1213 760 1724 865">No identified sponsor or authority.</p> <p data-bbox="1213 954 1793 1060">Little irrigated agriculture in Region C.</p>
Volumetric Measurement of Irrigation Water Use		
Crop Residue Management and Conservation Tillage		
On-Farm Irrigation Audit		
Furrow Dikes		
Land Leveling		
Contour Farming		
Conversion of Supplemental Irrigated Farmland to Dry-Land Farmland		

Agricultural BMPs

Strategy	Potentially Feasible?	If Not, Why?
Brush Control/Management	No	<p>No identified sponsor or authority.</p> <p>Little irrigated agriculture in Region C.</p>
Lining of On-Farm Irrigation Ditches		
Replacement of On-Farm Irrigation Ditches with Pipelines		
Low Pressure Center Pivot Sprinkler Irrigation Systems		
Drip/Micro Irrigation System		

Agricultural BMPs

Strategy	Potentially Feasible?	If Not, Why?
Gated and Flexible Pipe for Field Water Distribution Systems	No	<p>No identified sponsor or authority.</p> <p>Little irrigated agriculture in Region C.</p>
Surge Flow Irrigation for Field Water Distribution Systems		
Linear Move Sprinkler Irrigation Systems		
Lining of District Irrigation Canals		
Replacement of Irrigation District Canals and Lateral Canals with Pipelines		

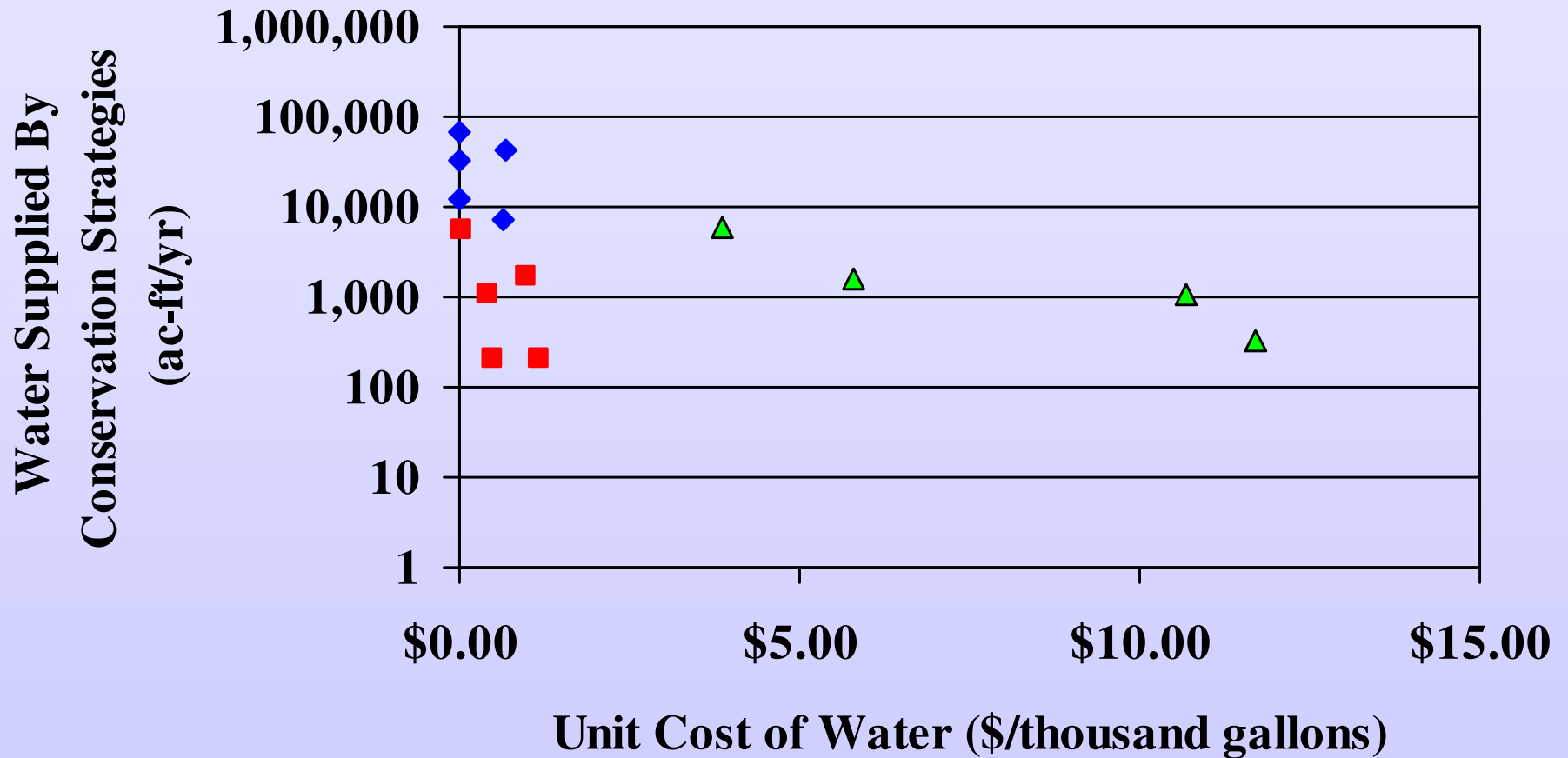
Agricultural BMPs

Strategy	Potentially Feasible?	If Not, Why?
Tailwater Recovery and Reuse System	No	No identified sponsor or authority.
Nursery Production Systems		Little irrigated agriculture in Region C.

Potentially Feasible Water Conservation Strategies

- Municipal:
 - Basic Package
 - Expanded Package
 - Less Cost-Effective Package
- Steam Electric Power
- Manufacturing
- Irrigation
- Mining
- Livestock

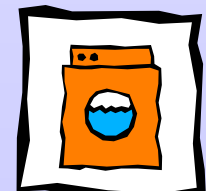
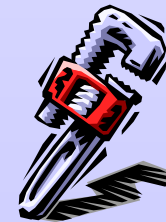
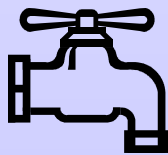
2020 Conservation Potential



- ◆ Basic Conservation Package
- Extended Conservation Package
- ▲ Less Cost-Effective Conservation Package

Municipal Basic Conservation Package

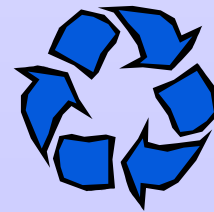
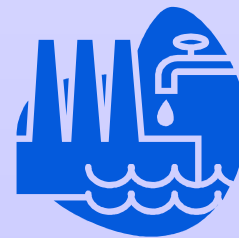
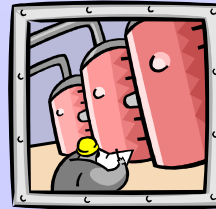
- Implement plumbing code (automatic; included in water demand projections)
- Public and school education
- Impact of increasing water prices (automatic)
- Water system audit, leak detection and repair, pressure control
- Implement federal residential clothes washer standards (automatic)



- Apply these to every municipal water user group

Municipal Expanded Conservation Package

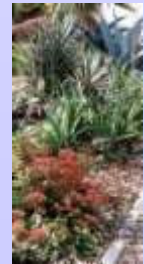
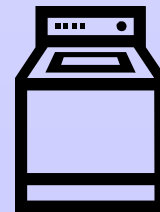
- Water conservation pricing structure
- Water waste prohibition
- Coin-op clothes washer rebate
- ICI general rebate
- ICI water audit, etc.
- Reuse



- Some of these might not be appropriate for a given WUG

Municipal Less Cost-Effective Package

- Showerhead and faucet aerators retrofit
- Residential customer water audit
- Water-efficient toilet rebate
- SF water-efficient clothes washer rebate
- Landscape irrigation systems rebate
- Landscape design and conversion rebate



- Some of these may be appropriate for a given WUG

Non-Municipal

- Steam Electric Power
 - More efficient new power plants (built into water demand projections)
 - Reuse of reclaimed water
- Manufacturing
 - Manufacturing general rebate
- Irrigation
 - Golf course conservation
 - Reuse of reclaimed water

Non-Municipal

- Mining
 - Recycling of water in operations
 - Reuse of reclaimed water
- Livestock
 - None (no shortages projected)

Recommended Water Conservation Strategies

- Municipal
 - Basic package recommended for all WUGs
 - Expanded package recommended for many WUGs (107 of 271)
 - Less cost-effective strategies not recommended
- Non-Municipal
 - All potentially feasible strategies are recommended

Estimated Water Savings from Water Conservation Strategies

	2010	2020	2030	2040	2050	2060
ESTIMATED CONSERVATION						
Reuse	354,028	556,183	672,183	706,240	733,755	807,587
Other Conservation	81,315	178,321	266,051	353,246	440,302	537,501
TOTAL	435,342	734,505	938,235	1,059,485	1,174,058	1,345,088
WATER DEMAND BEFORE CONSERVATION						
	1,804,898	2,175,181	2,471,051	2,778,325	3,133,511	3,553,139
PERCENTAGE ESTIMATED CONSERVATION						
Reuse	19.6	25.6	27.2	25.4	23.4	22.7
Other Conservation	4.5	8.2	10.8	12.7	14.1	15.1
TOTAL	24.1	33.8	38.0	38.1	37.5	37.8

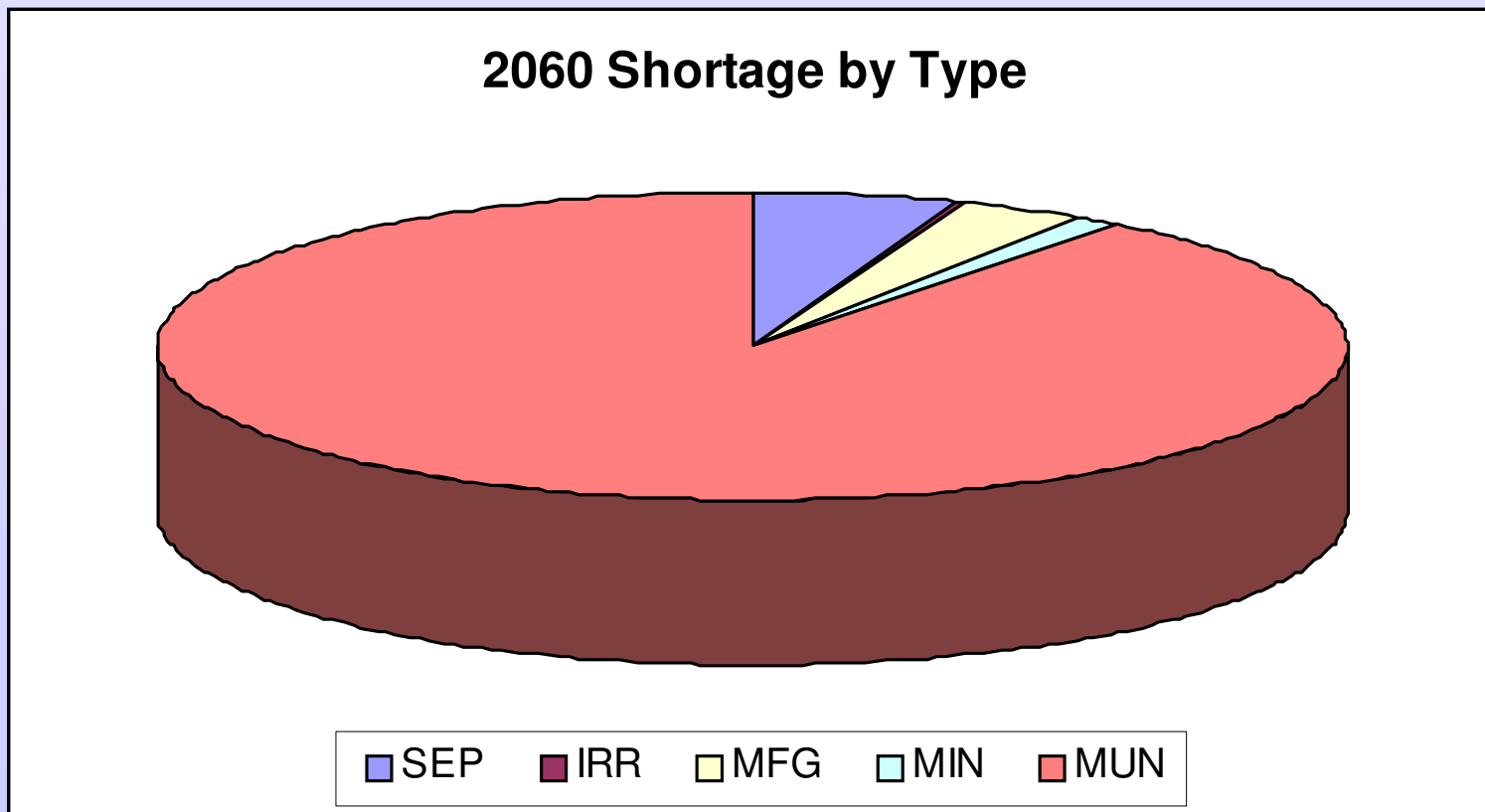
Discussion Item

Summary of Water Needs

Summary of Water Needs

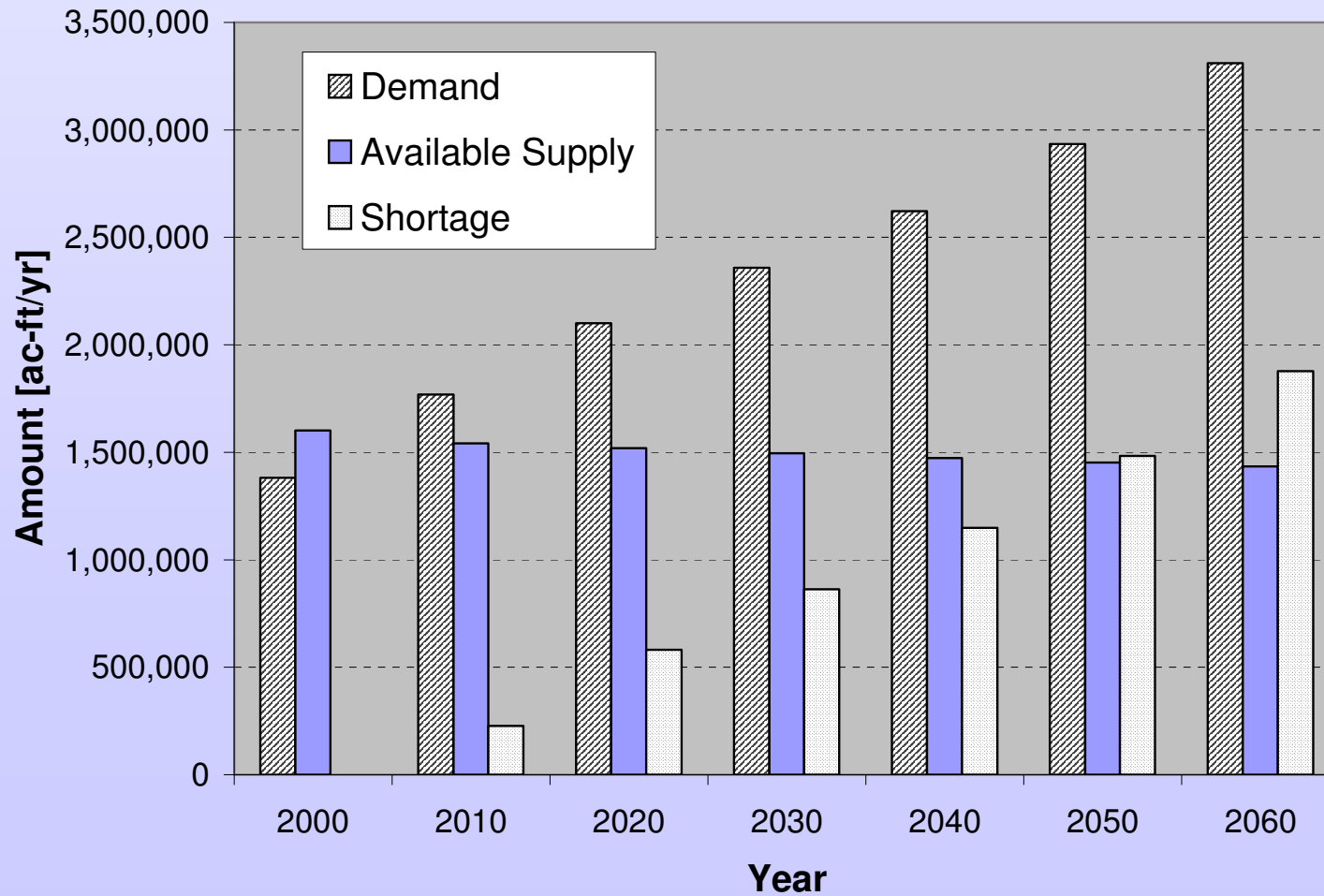
- Of 345 water user groups, 279 have projected shortages by 2060 (81%)
- Total shortage (only WUGs with shortages):
 - 2010: 315,324 acre-feet per year
 - 2060 1,925,151 acre-feet per year
- 92% of the projected needs are associated with municipal and manufacturing uses

Summary of Water Needs



Summary of Water Needs

REGION C COMPARISON OF SUPPLY AND DEMAND



Summary of Water Needs

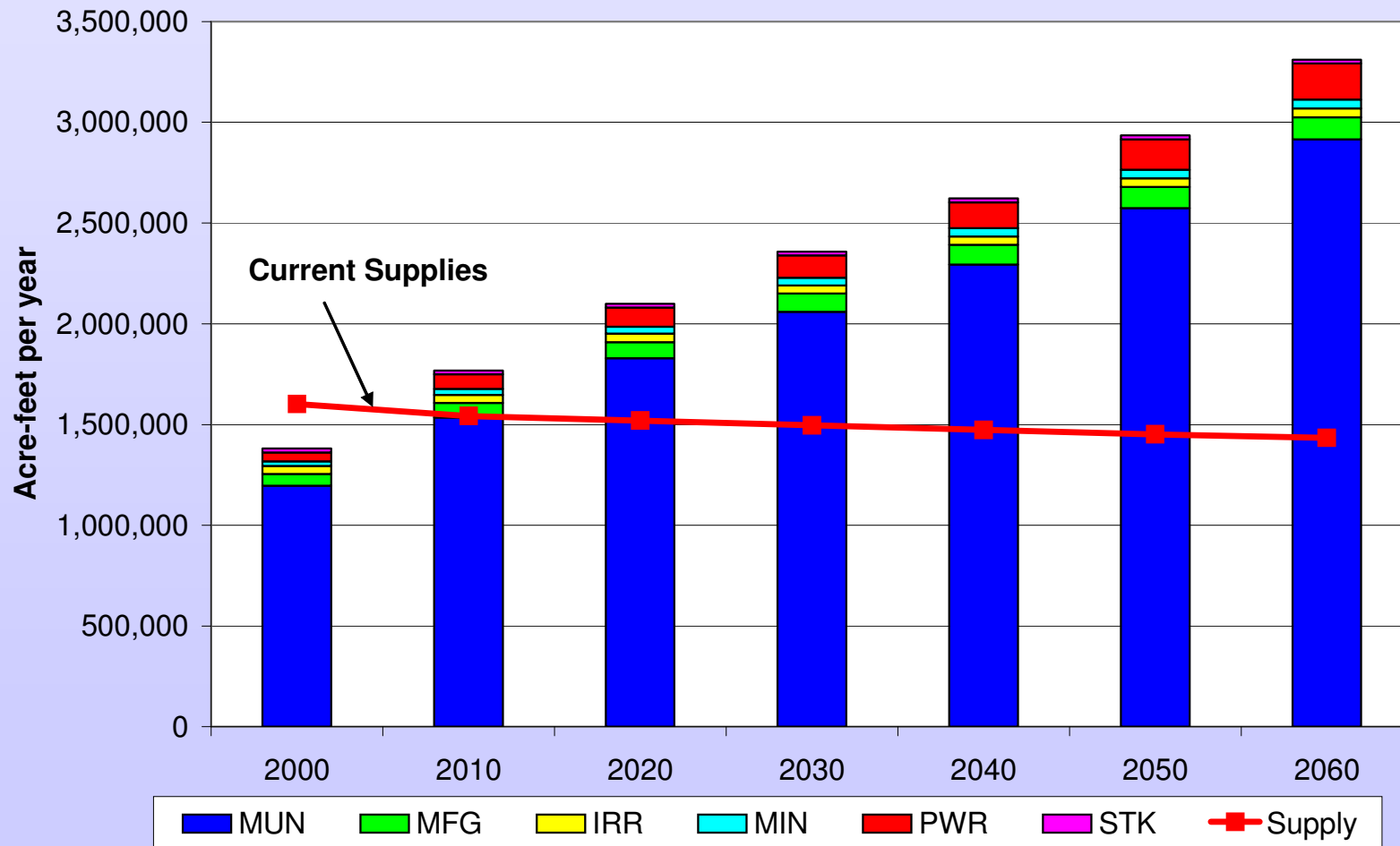
- Wholesale Water Providers (27 total)
 - 3 WWPs do not have projected needs
 - Dallas County Park Cities
 - Sulphur River WD (Region D)
 - Upper Neches MWA (Region I)
 - 4 Regional WWPs provide for 95% of demand in Region C
 - DWU, TRWD, NTMWD, UTRWD
 - Total needs of current customers = 1,720,950 af/y

Discussion Item

Feasible Water Management Strategies

Regional Demands

Projected Demands and
Current Supplies to Region C Users

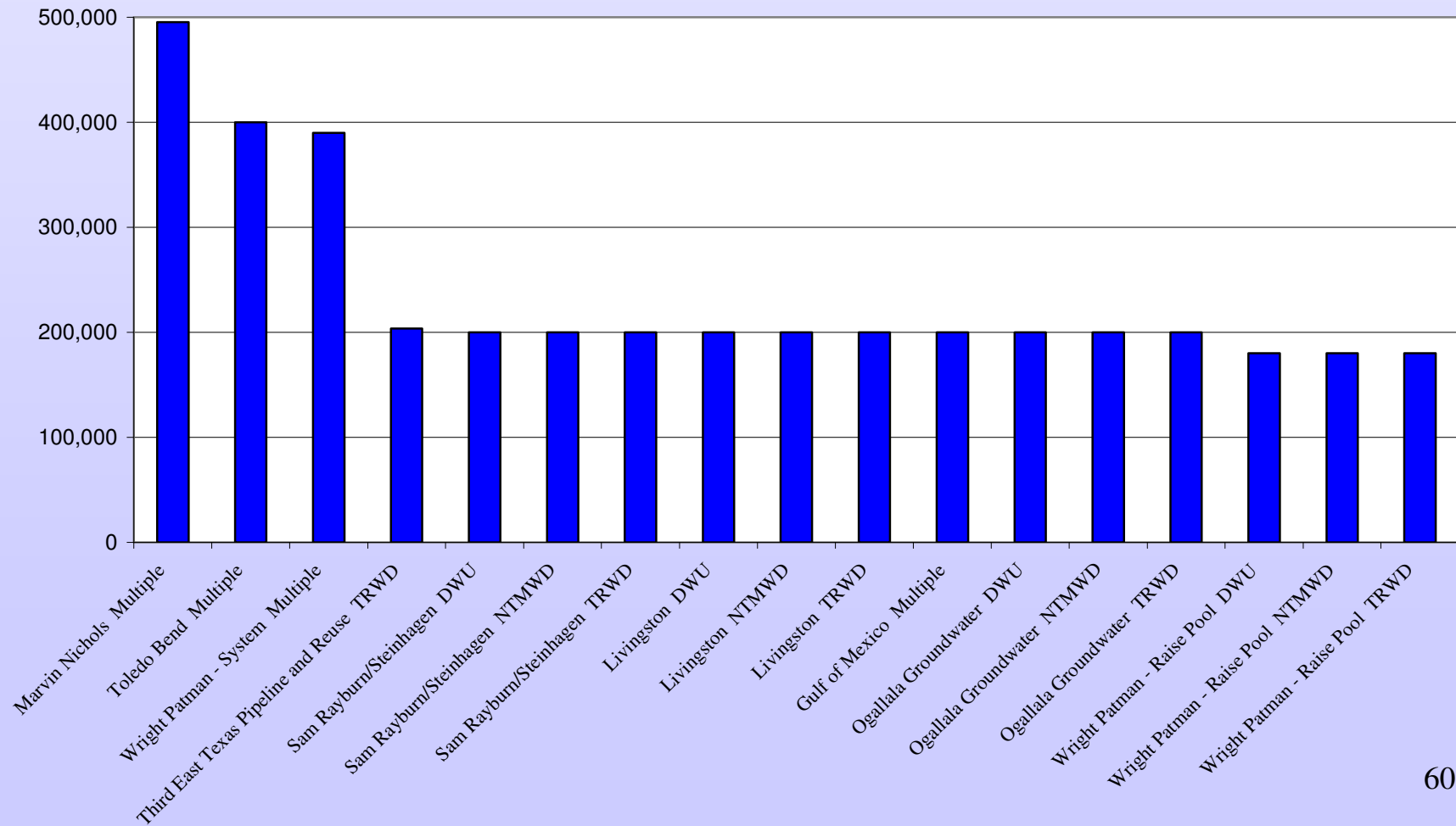


Regional Supply Strategies

- Strategies for 4 Regional Providers
 - Connection of existing sources of WWP
 - New connection to existing sources
 - Development of new sources
 - Reuse
 - Conservation
- Evaluated 50 infrastructure strategies for regional providers to date

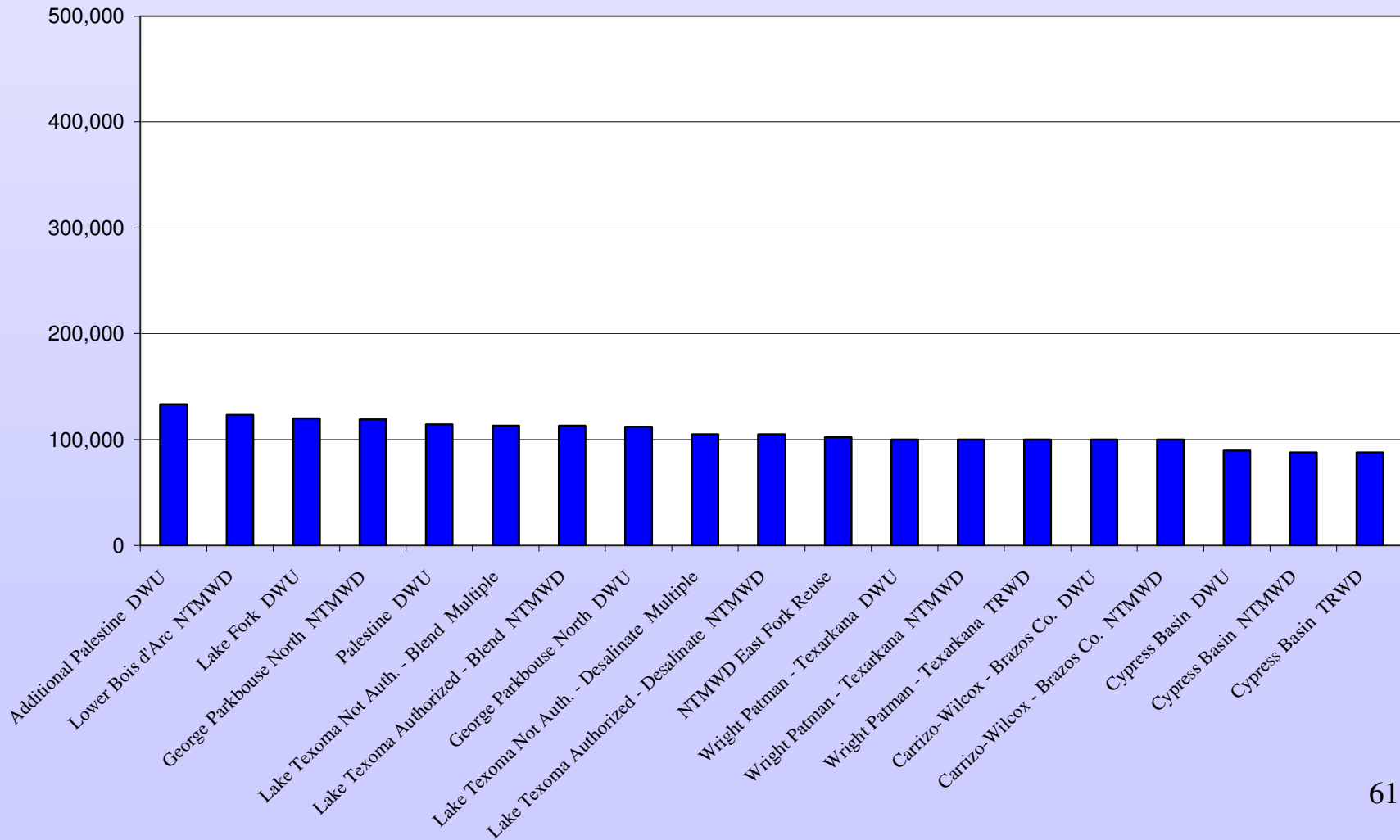
Regional Strategies

Supply Quantity (1)



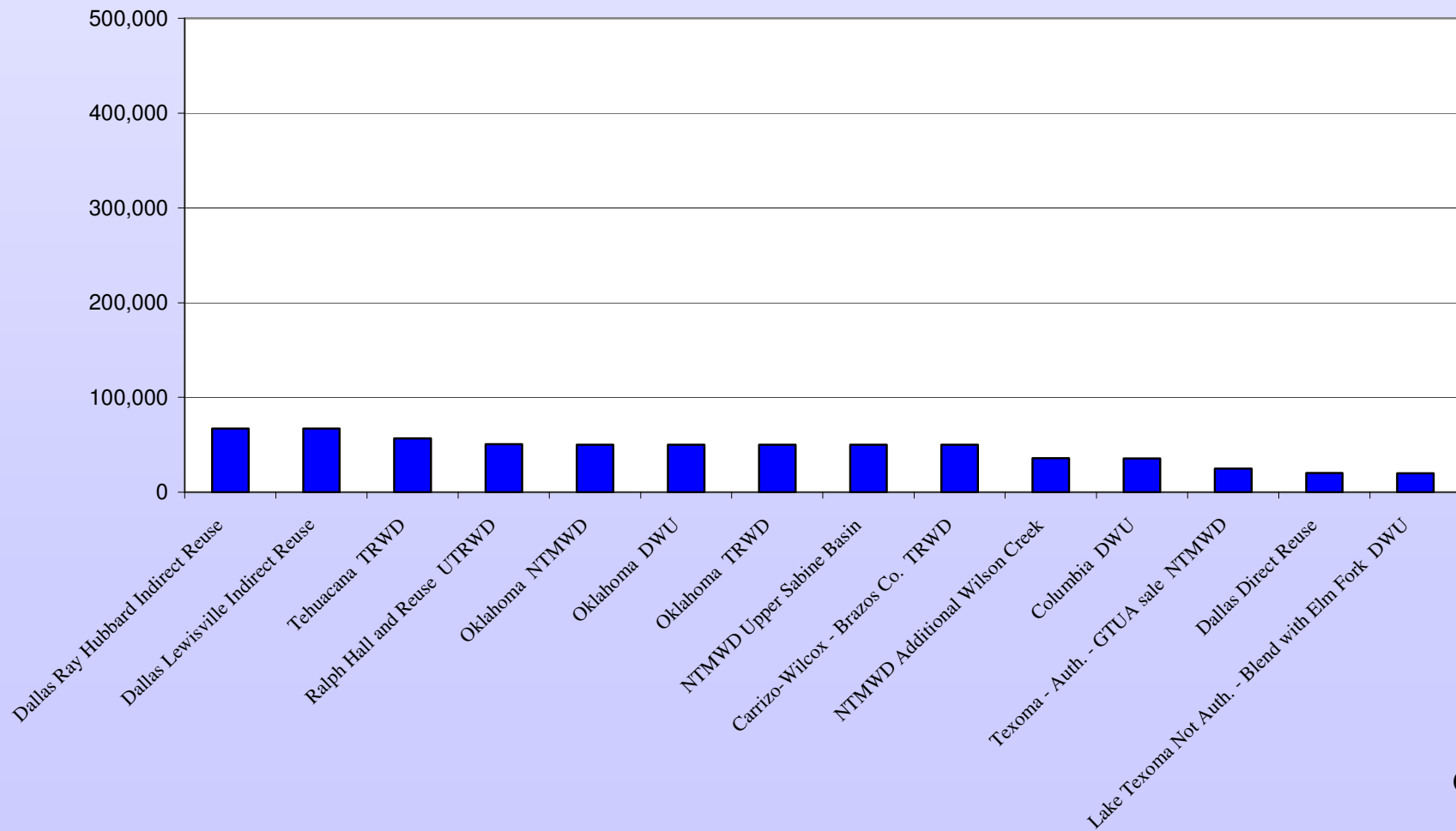
Regional Strategies

Supply Quantity (2)



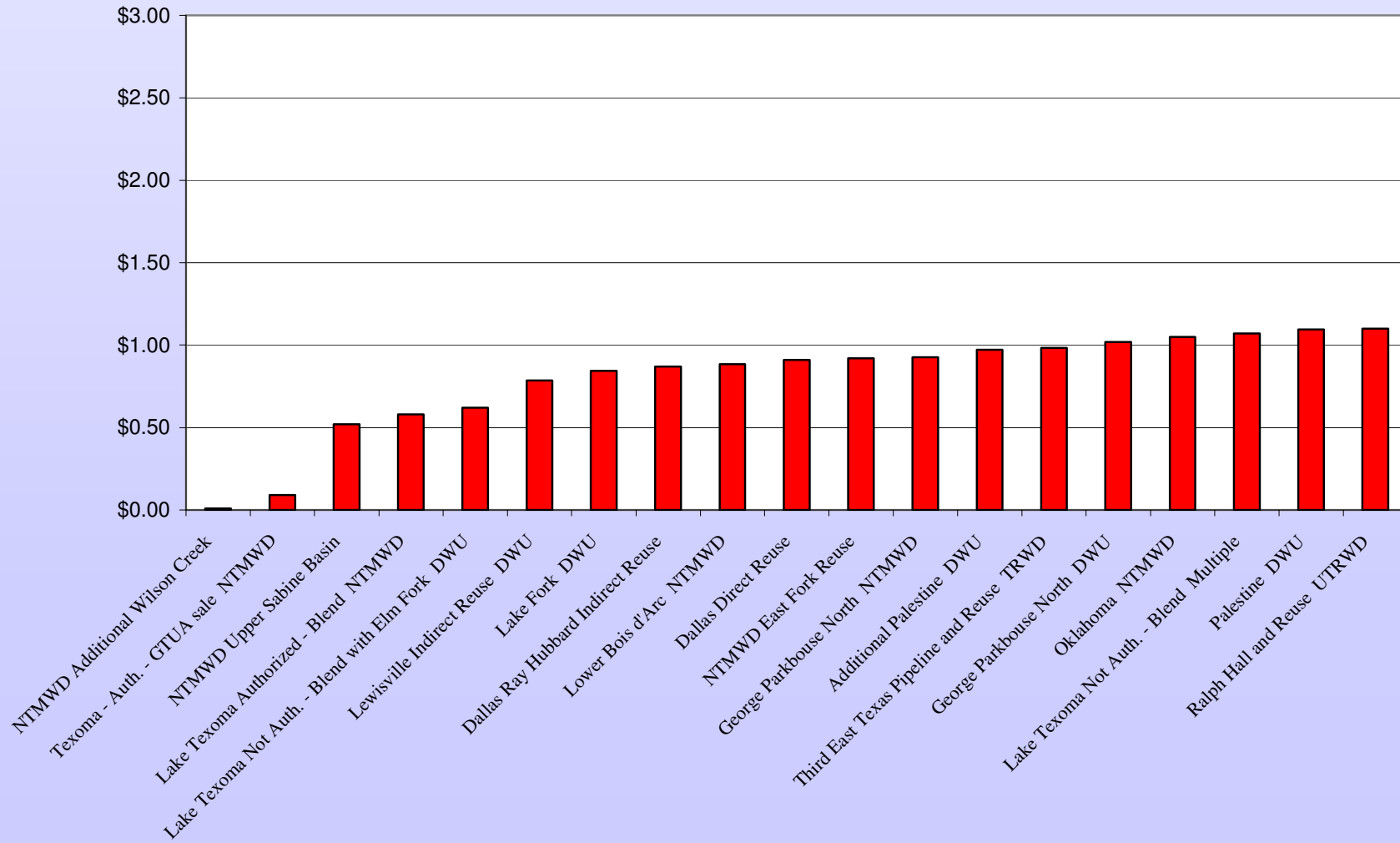
Regional Strategies

Supply Quantity (3)



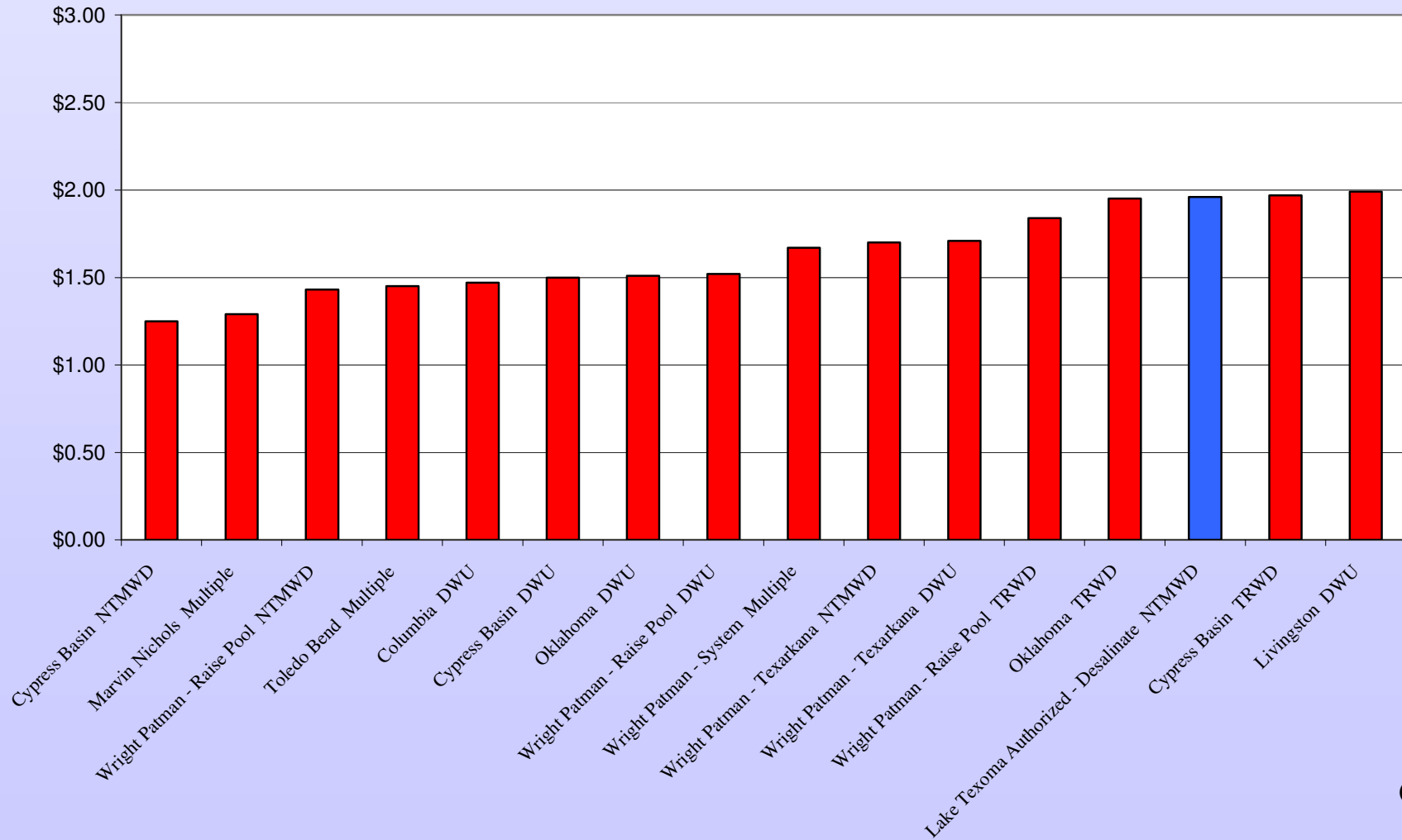
Regional Strategies

Costs for Region C Strategies (1)



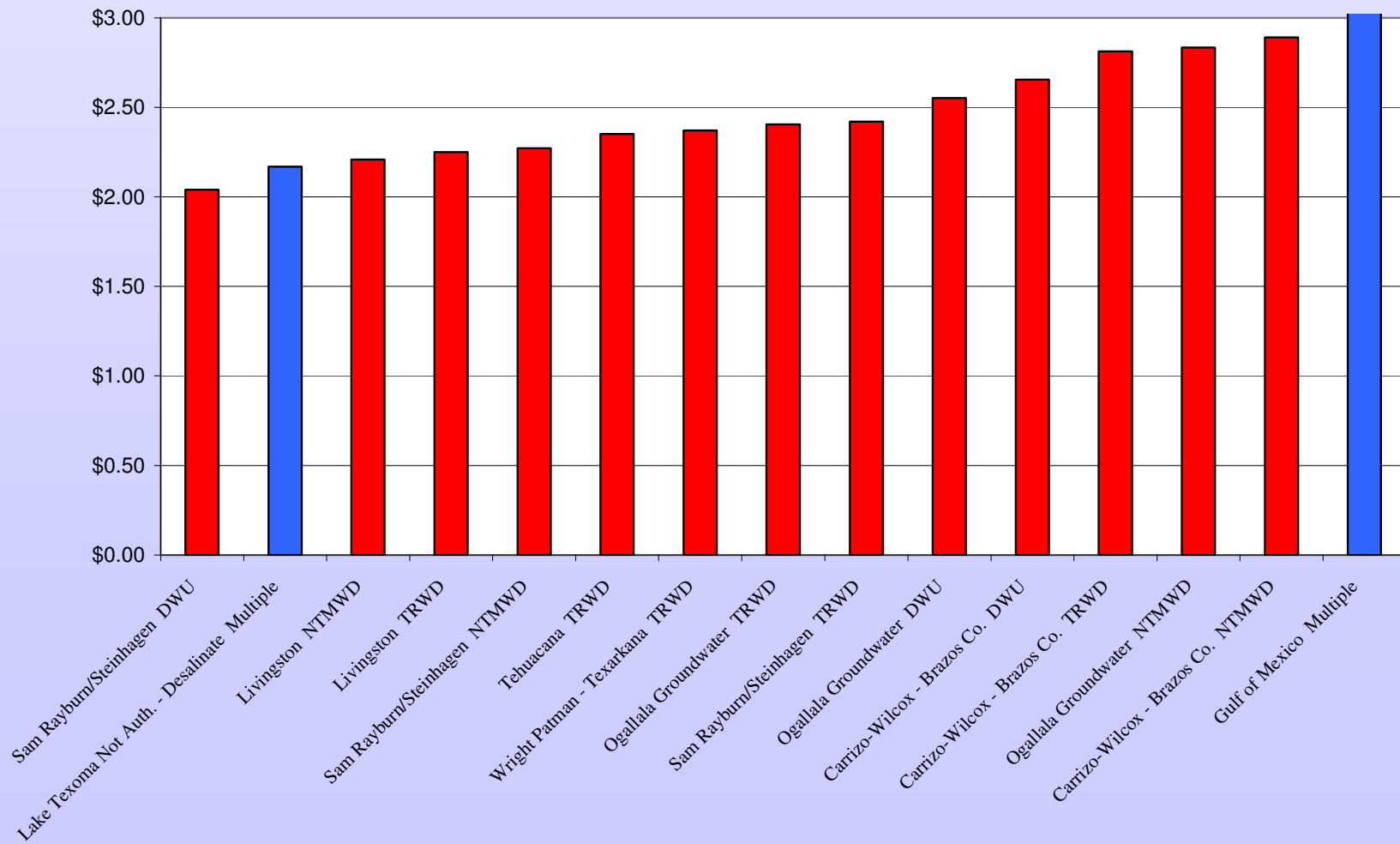
Regional Strategies

Costs for Region C Strategies (2)



Regional Strategies

Costs for Region C Strategies (3)



Collin County

- Current Supplies
 - North Texas Municipal Water District (85%)
 - Dallas Water Utilities (9%)
 - Groundwater (3%)
 - Reuse (2%)
 - Local supplies (1%)

Collin County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Temporary overdraft of Trinity and Woodbine aquifers in 2010
- Water treatment plant construction/expansions

Collin County

- North Texas Municipal Water District will supply Allen, Anna, Caddo Basin SUD, Celina (portion), Culleoka WSC, Danville WSC, East Fork SUD, Fairview, Farmersville, Frisco, Josephine (including Reg D portion), Lavon WSC, Lowry Crossing, Lucas, McKinney, Melissa, Milligan WSC, Murphy, Nevada, New Hope, North Collin WSC, Parker, Plano, Princeton, Prosper (portion), Richardson, Royce City, Sachse, St. Paul, South Grayson WSC, Weston, Wylie, irrigation, manufacturing, mining, & steam electric power.

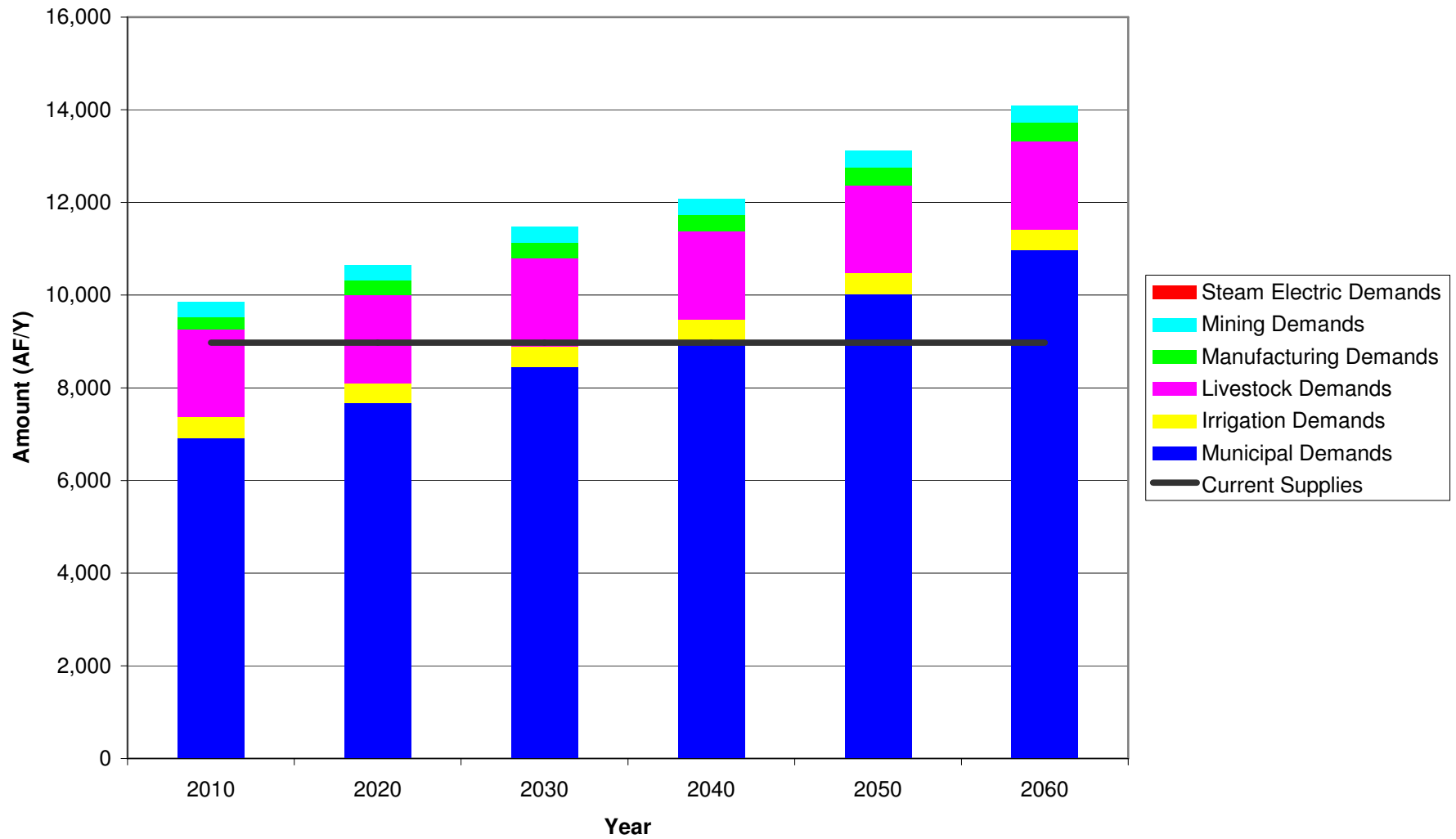
Collin County

- Anna, Melissa, South Grayson WSC, & Weston will participate in GTUA pipeline project.
- Anna, Blue Ridge, Gunter Rural WSC, South Grayson WSC, & Weston will temporarily overdraft Woodbine aquifer.
- Upper Trinity Regional Water District will supply Celina (portion) & Prosper (portion).
- Greater Texoma Utility Authority will supply Celina (portion).

Collin County

- Dallas Water Utilities will supply Dallas.
- Gunter Rural WSC and South Grayson WSC will participate in the Grayson County surface water project.
- Region D may supply Hickory Creek SUD.
- Garland, county-other, & livestock have no shortages in Collin County.

Cooke County Comparison of Current Supplies to Projected Demands



Cooke County

- Current Supplies
 - Groundwater (71%)
 - Local supplies (16%)
 - Moss Lake (13%)

Cooke County

- Water conservation for all municipalities, irrigation, and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Temporary overdraft of Trinity aquifer in 2010
- Water treatment plant construction/expansions

Cooke County

- Gainesville will develop Cooke County Water Supply Project and supply Bolivar WSC (portion), Kiowa Homeowner WSC, Lindsay, Valley View (portion), Woodbine WSC, county-other, irrigation, & manufacturing (portion).
- Upper Trinity Regional Water District will supply Bolivar WSC (portion).
- Gainesville supplies will include additional Moss Lake and expanded water treatment facilities.

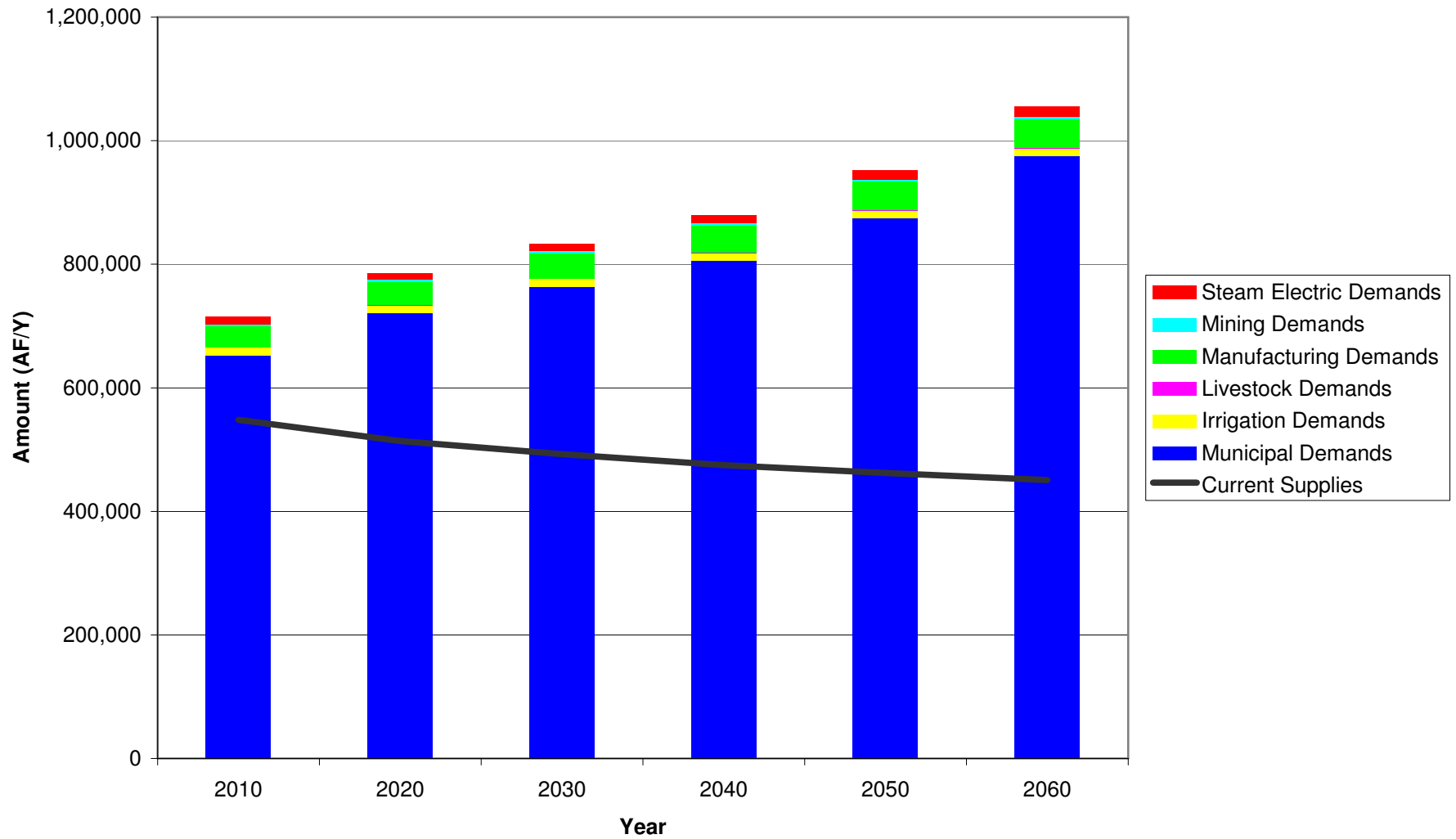
Cooke County

- Muenster will get supply from Muenster Lake. Muenster Lake will need subordination or upstream diversion.
- Muenster will supply manufacturing (portion).
- Grayson County surface water supply project will supply Two Way WSC.
- Valley View will purchase its water distribution system from Bolivar WSC.
- Bolivar WSC will supply Valley View (portion).

Cooke County

- Mining will get supply from groundwater.
- Irrigation and steam electric power have no shortages.

Dallas County Comparison of Current Supplies to Projected Demands



Dallas County

- Current Supplies
 - Dallas Water Utilities (77%)
 - North Texas Municipal Water District (17%)
 - Other surface water (3%)
 - Park Cities MUD (2%)
 - Reuse (1%)

Dallas County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

Dallas County

- Dallas Water Utilities will supply Addison, Balch Springs, Carrollton, Cedar Hill, Cockrell Hill, Combine, Combine WSC, Coppell, Dallas, Dallas County WCID #6, DeSoto, Duncanville, Farmers Branch, Glenn Heights, Grand Prairie, Hutchins, Irving (portion), Lancaster, Lewisville, Ovilla, Rockett SUD, Seagoville, Wilmer, irrigation, manufacturing (portion), & mining.

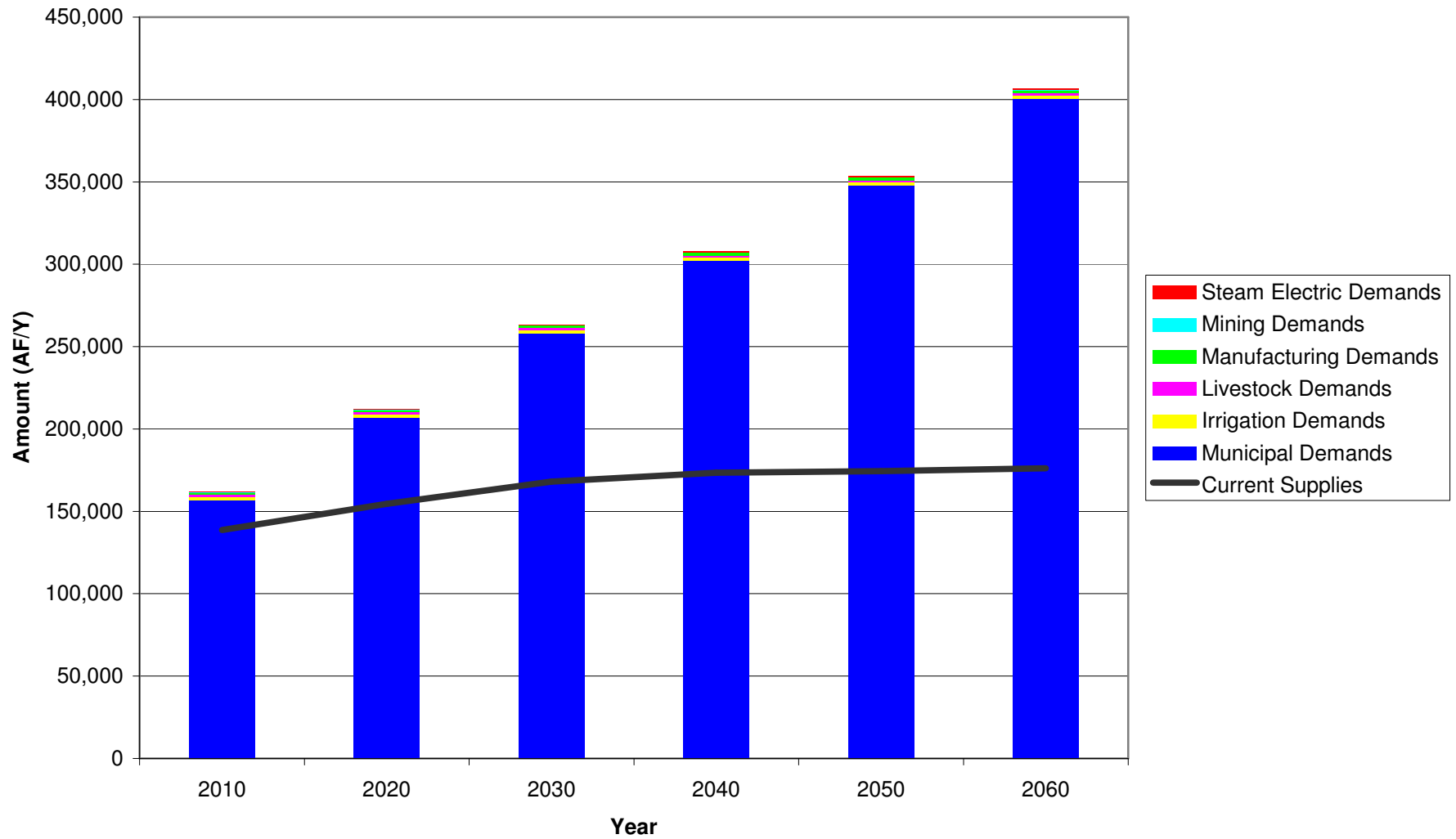
Dallas County

- North Texas Municipal Water District will supply East Fork SUD, Garland, Mesquite, Richardson, Rowlett, Sachse, Sunnyvale, Wylie, & manufacturing (portion).
- DWU will supply reuse or raw water for steam electric purposes.
- Mining will use some recycling of existing water as part of their strategy.

Dallas County

- Irving will supply some water for manufacturing.
- Highland Park, University Park, county-other, & livestock have no shortages.
- Rockett SUD will supply Sardis-Lone Elm
- Irving to be determined

Denton County Comparison of Current Supplies to Projected Demands



Denton County

- Current Supplies
 - Dallas Water Utilities (36%)
 - Denton (25%)
 - Upper Trinity Regional Water District (18%)
 - Groundwater (11%)
 - Reuse (4%)
 - Tarrant Regional Water District (3%)
 - North Texas Municipal Water District (2%)
 - Other local supplies (1%)

Denton County

- Water conservation for all municipalities, irrigation, and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

Denton County

- Dallas Water Utilities will supply Carrollton, Coppell, Dallas, Denton, Hebron (portion), Lewisville, The Colony (portion), and manufacturing (portion).
- Denton will supply manufacturing (portion).
- Gainesville will supply Bolivar WSC (portion).

Denton County

- Upper Trinity Regional Water District will supply Argyle, Argyle (WSC), Aubrey, Bartonville, Bartonville WSC, Bolivar WSC (portion), Copper Canyon, Corinth, Cross Roads, Denton County FWSD #1, Double Oak, Flower Mound, Hebron (portion), Hickory Creek, Highland Village, Justin, Krugerville, Krum, Lake Dallas, Lincoln Park, Mustang SUD, Northlake (portion), Oak Point, Pilot Point, Ponder, Sanger, Shady Shores, Trophy Club, county-other (portion), manufacturing (portion), and mining.

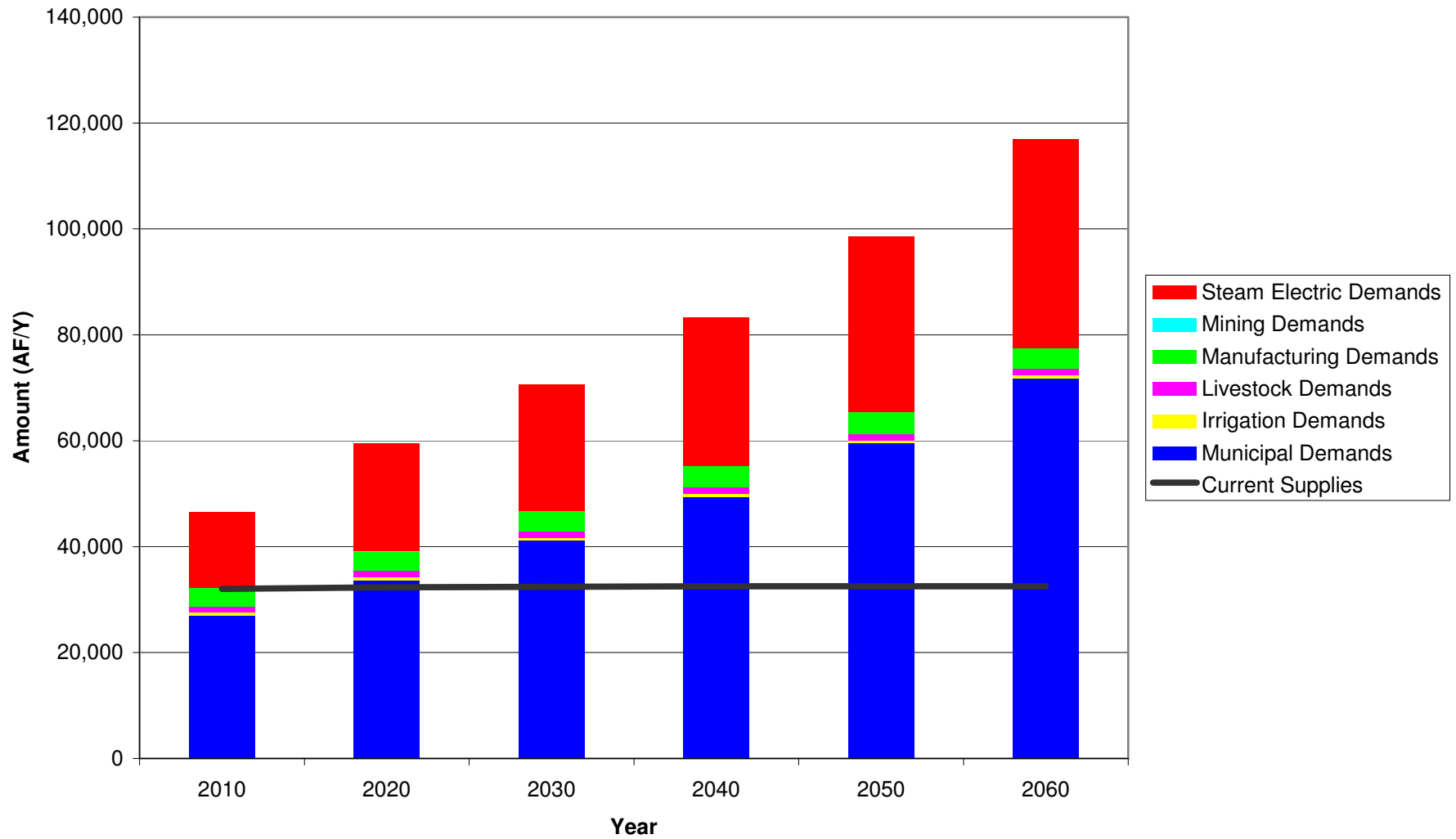
Denton County

- Tarrant Regional Water District will supply Fort Worth.
- Fort Worth will supply Northlake (portion), Roanoke, Southlake, and county-other (portion).
- North Texas Municipal Water District will supply Frisco, Hackberry, Little Elm, Plano, Prosper, and The Colony (portion).
- TRA reuse will supply county-other (portion) and irrigation.

Denton County

- Livestock and steam electric power have no shortages.

Ellis County Comparison of Current Supplies to Projected Demands



Ellis County

- Current Supplies
 - Trinity River Authority (31%)
 - Groundwater (20%)
 - Waxahachie (18%)
 - Midlothian (11%)
 - Reuse (10%)
 - Local supplies (7%)
 - Dallas Water Utilities (3%)

Ellis County

- Water conservation for all municipalities and irrigation
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

Ellis County

- Trinity River Authority will supply water from Tarrant Regional Water District to Buena Vista – Bethel SUD (portion), Ennis (portion), Ferris (portion), Italy, Maypearl, Palmer (portion), Red Oak (portion), Rockett SUD (portion), Waxahachie (portion), and County-Other through the Ellis County Water Supply Project.
- Trinity River Authority will supply water from Tarrant Regional Water District to Ennis (portion).
- Trinity River Authority will supply Midlothian from Tarrant Regional Water District pipeline.

Ellis County

- Rockett SUD will supply Buena Vista Bethel SUD (portion), Ferris (portion), Mountain Peak WSC (portion), Palmer (portion), Pecan Hill, & Sardis-Lone Elm WSC.
- Bardwell will get its supply from the Woodbine aquifer.

Ellis County

- Dallas Water Utilities will supply Cedar Hill, Ennis (portion), Glenn Heights, Grand Prairie, Oak Leaf, Ovilla, Red Oak (portion), Rockett SUD (portion), & Waxahachie (portion).
- Files Valley WSC will purchase additional water from Aquilla WSD.

Ellis County

- Tarrant Regional Water District will supply Mansfield.
- Reuse will be part of the supply for Ennis and Waxahachie.
- Ennis will supply Community Water Company, Rice WSC (portion), & manufacturing (portion).
- Ennis is considering the idea of raising the conservation pool in Lake Bardwell.

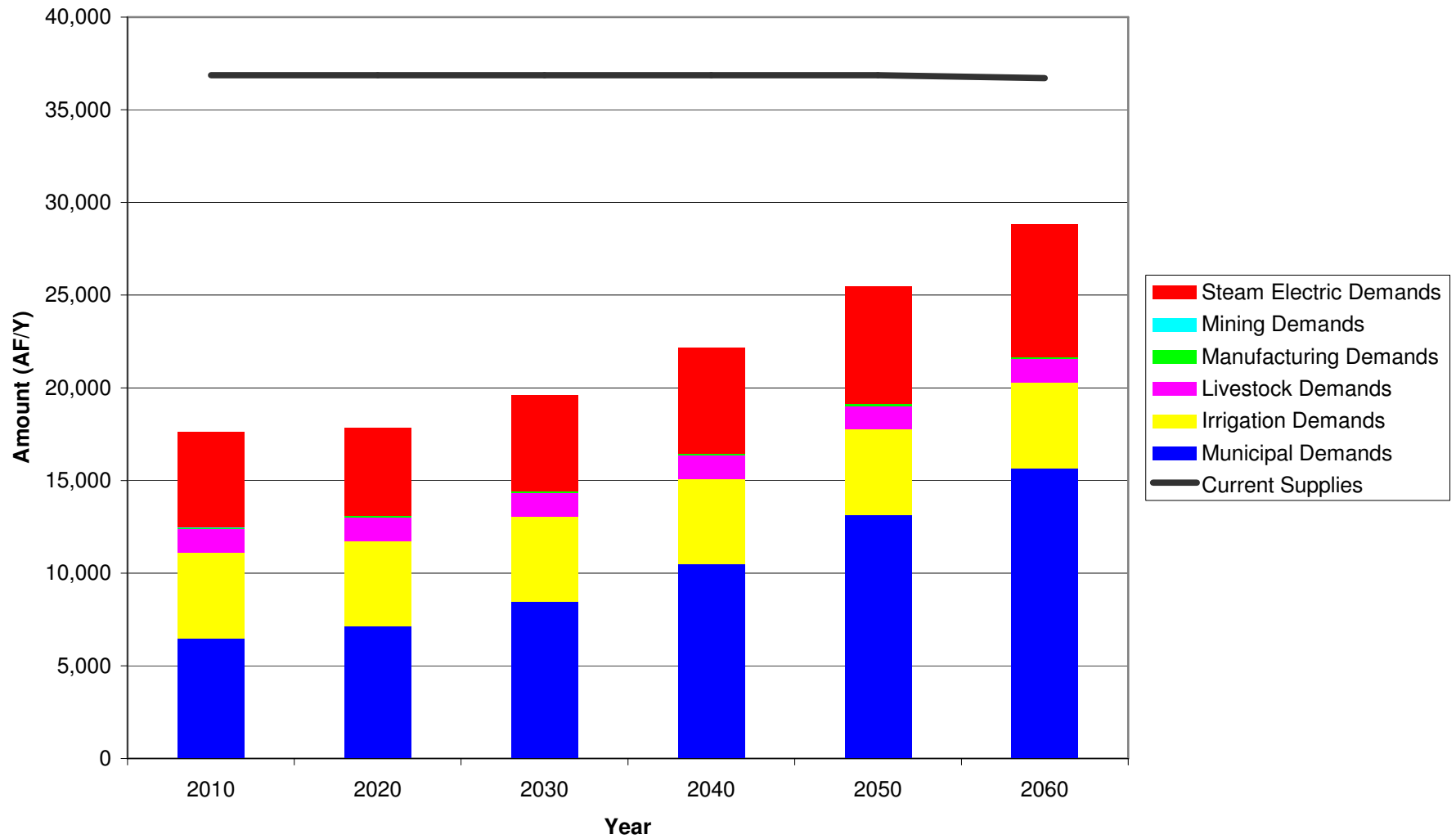
Ellis County

- Files Valley WSC will supply Milford.
- Midlothian will supply Mountain Peak WSC (portion), manufacturing (portion), and steam electric power (portion).
- Corsicana will supply Rice WSC (portion).
- Reuse water will supply irrigation and steam electric power (portion).

Ellis County

- Waxahachie will supply manufacturing (portion).
- Ferris will supply manufacturing (portion).
- Brandon-Irene WSC, Johnson County Rural WSC, Venus, livestock, and mining have no water shortages.

Fannin County Comparison of Current Supplies to Projected Demands



Fannin County

- Current Supplies
 - Local supplies (44%)
 - Lake Texoma (27%)
 - Groundwater (18%)
 - Bonham (10%)
 - Other supplies (1%)

Fannin County

- Water conservation for all municipalities
- Supplemental wells for all who currently have groundwater supplies
- Temporarily overdraft the Trinity and Woodbine aquifers in 2010
- Water treatment plant construction/expansions

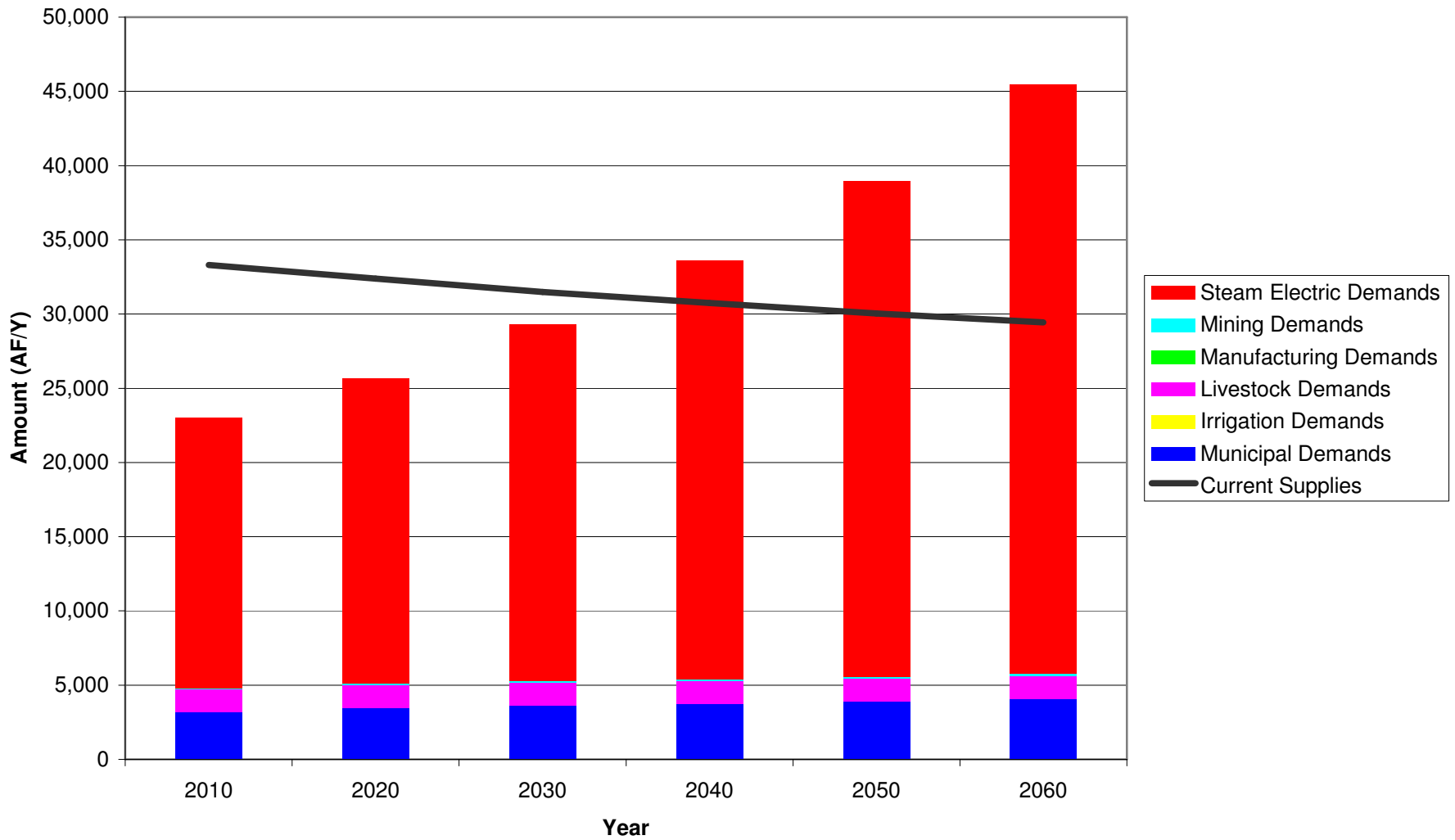
Fannin County

- North Texas Municipal Water District will supply Bonham (portion), Ector, Honey Grove, Leonard, Savoy, Southwest Fannin County SUD, Trenton, & county-other (portion) through the Fannin County Water Supply Project.
- Lake Bonham will supply Bonham (portion).
- Bonham will supply county-other (portion).

Fannin County

- Upper Trinity Regional Water District will supply Ladonia (Lake Ralph Hall).
- Greater Texoma Utility Authority will supply Whitewright through the Grayson County Water Supply Project.
- Irrigation, livestock, manufacturing, mining, and steam electric power do not have shortages.
- Region D may supply Hickory Creek SUD and North Hunt WSC.

Freestone County Comparison of Current Supplies to Projected Demands



Freestone County

- Current Supplies
 - TRA (Livingston) (72%)
 - Groundwater (15%)
 - TXU (Lake Fairfield & Livingston) (6%)
 - Other local supplies (6%)
 - Tarrant Regional Water District (1%)

Freestone County

- Water conservation for all municipalities
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

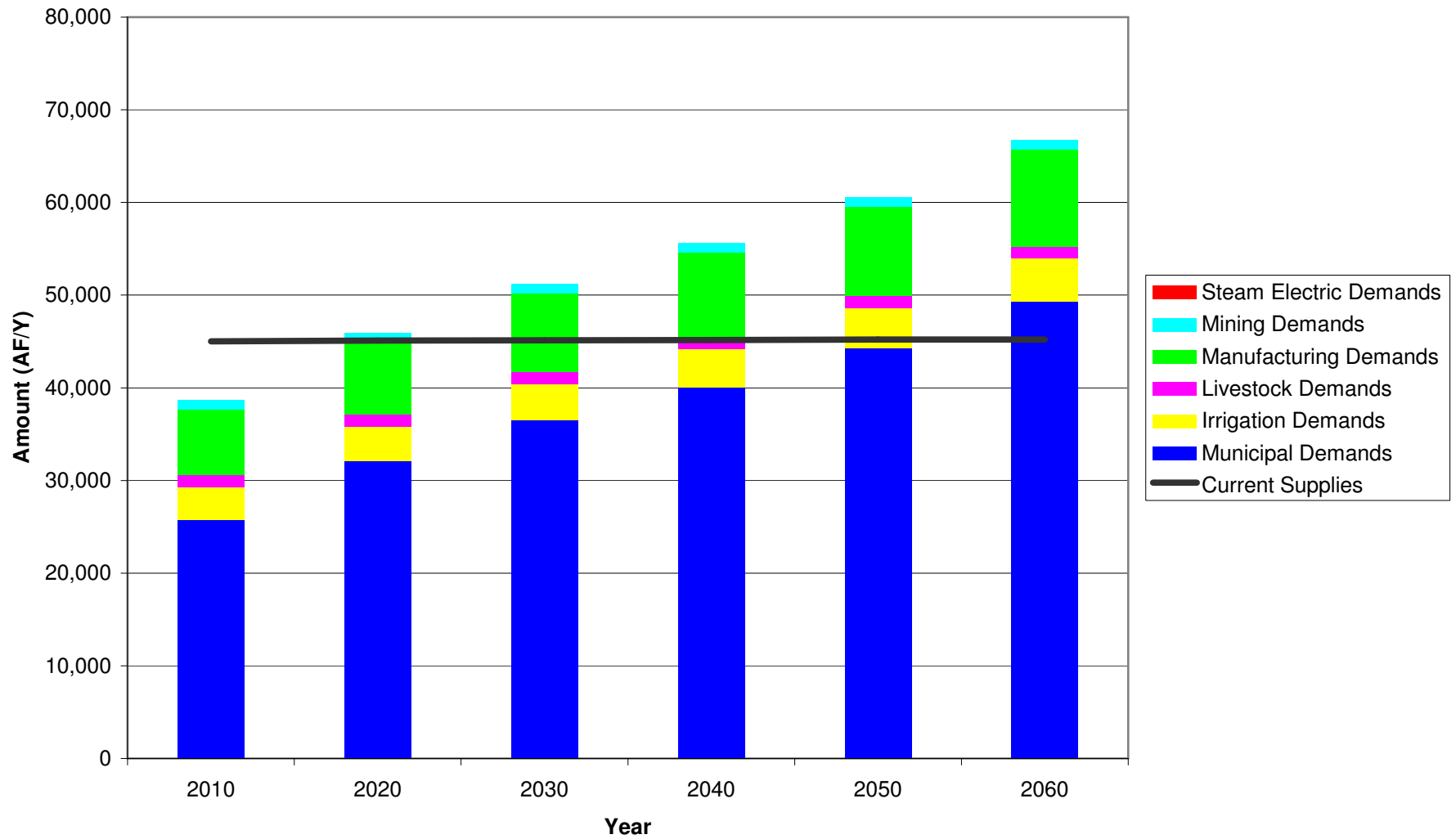
Freestone County

- Tarrant Regional Water District will supply Fairfield and steam electric power (portion).
- Trinity River Authority will supply reuse to steam electric power (portion).
- Teague will rely on groundwater for future supplies.
- Wortham to be determined.

Freestone County

- Flo Community WSC, county-other, irrigation, livestock, manufacturing, and mining do not have shortages.

Grayson County Comparison of Current Supplies to Projected Demands



Grayson County

- Current Supplies
 - Groundwater (47%)
 - Lake Texoma (32%)
 - Lake Randell (12%)
 - Local supplies (9%)

Grayson County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Temporarily overdraft the Trinity and Woodbine aquifers in 2010

Grayson County

- Greater Texoma Utility Authority will supply Bells, Collinsville, Gunter, Gunter Rural WSC, Luella WSC, Sherman, South Grayson WSC (portion), Southmayd, Tioga, Tom Bean, Two Way WSC, Whitesboro, Whitewright, and county-other (portion) with the Grayson County Surface Water Project.

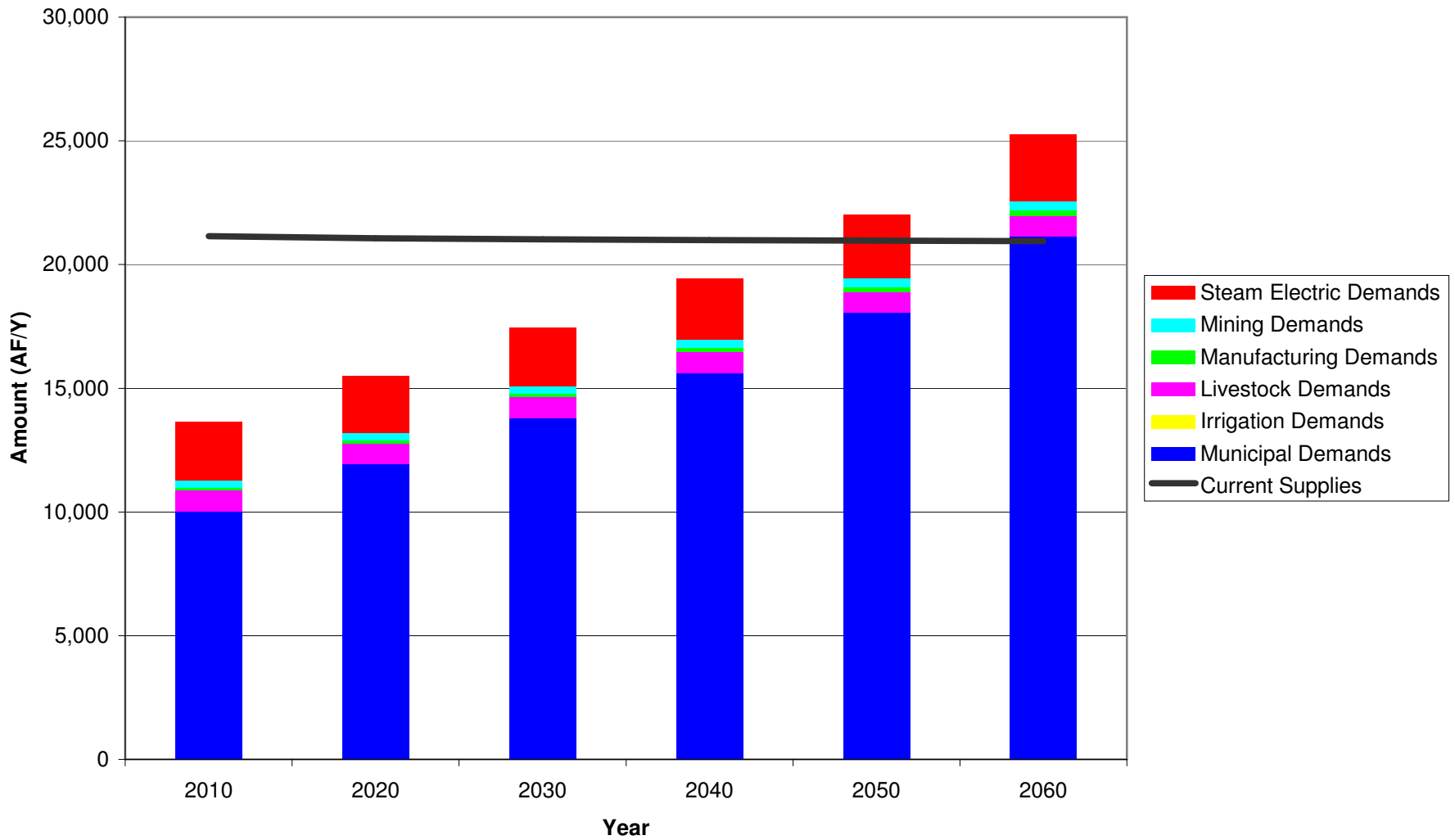
Grayson County

- Denison will get additional water from Lake Texoma.
- Denison will supply Pottsboro, county-other (portion), and manufacturing (portion).
- North Texas Municipal Water District will supply Howe, South Grayson WSC (portion), Van Alstyne, and county-other (portion).

Grayson County

- Red River Authority will supply county-other (portion).
- Sherman will supply manufacturing (portion).
- Howe will supply manufacturing (portion).
- Irrigation will rely on groundwater.
- Woodbine WSC, livestock, mining, and steam electric power have no shortages.

Henderson County Comparison of Current Supplies to Projected Demands



Henderson County

- Current Supplies
 - Forest Grove (SEP) (41%)
 - Groundwater (19%)
 - Trinidad (SEP) (15%)
 - Tarrant Regional Water District (14%)
 - Lake Athens (7%)
 - Other local supplies (4%)

Henderson County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

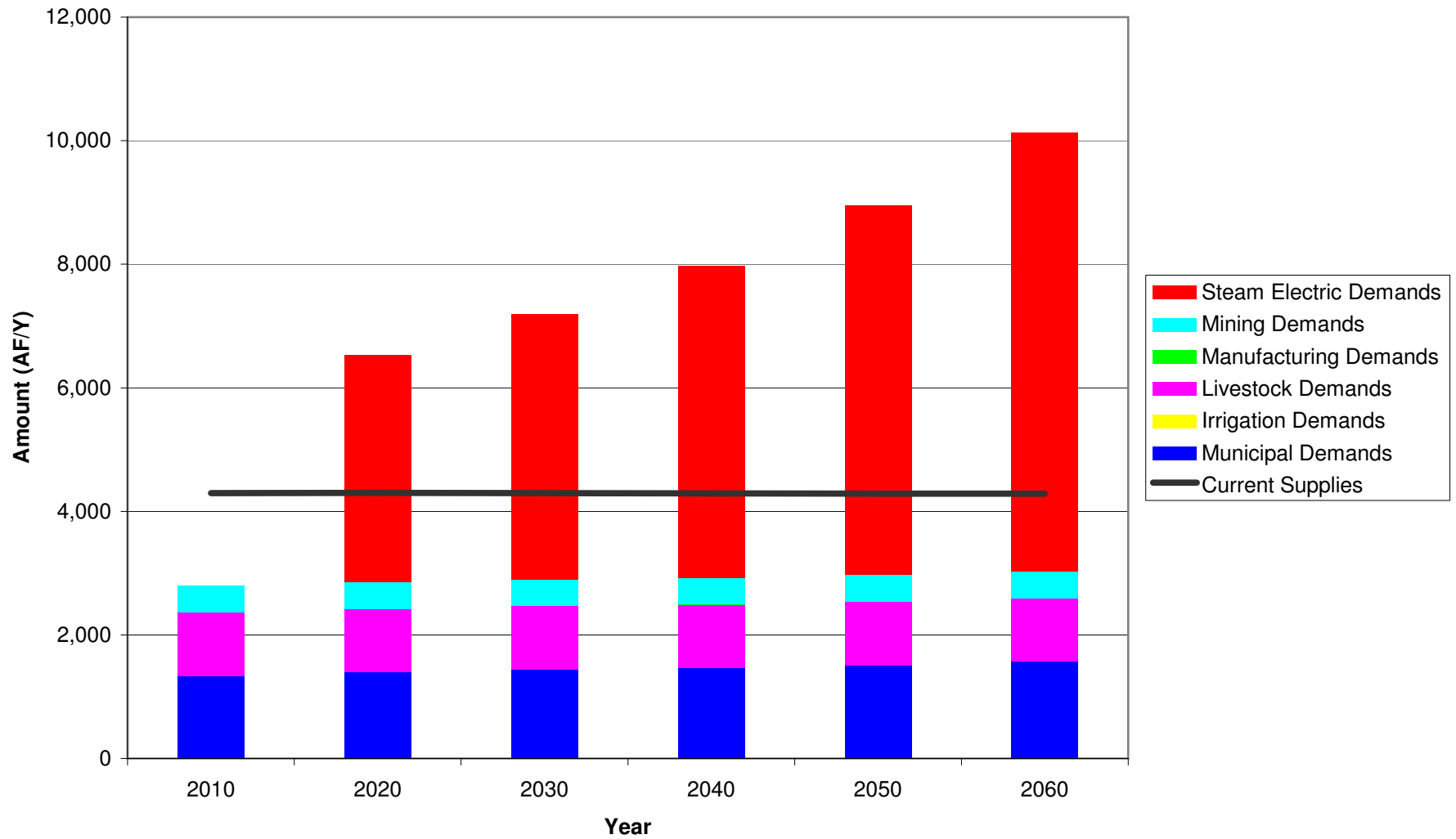
Henderson County

- Athens MWA will supply Athens and manufacturing.
- Region D will supply Bethel-Ash WSC.
- Tarrant Regional Water District will supply East Cedar Creek FWSD, Mabank, & West Cedar Creek MUD.
- Athens MWA to be determined.

Henderson County

- East Cedar Creek FWSD will supply Gun Barrel City, Log Cabin, & Payne Springs.
- Eustace will rely on groundwater.
- West Cedar Creek MUD will supply Seven Points, & Tool.
- Malakoff, Trinidad, Virginia Hill WSC, county-other, irrigation, livestock, mining, and steam electric power have no shortages.

Jack County Comparison of Current Supplies to Projected Demands



Jack County

- Current Supplies
 - Other local supplies (50%)
 - Lost Creek/Jacksboro System (23%)
 - Groundwater (17%)
 - Reuse (10%)

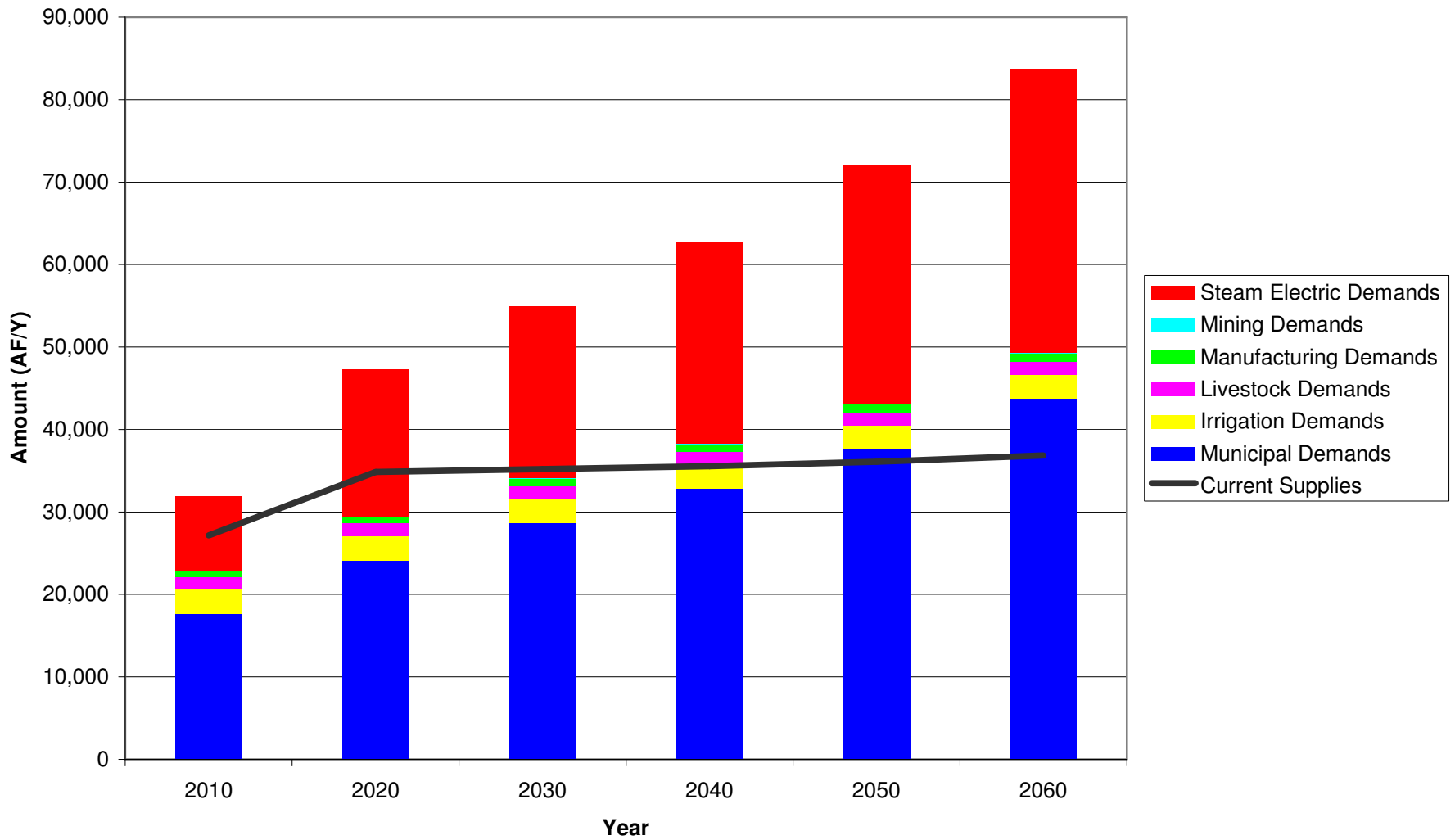
Jack County

- Water conservation for all municipalities
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

Jack County

- Jacksboro will supply Bryson and county-other.
- Tarrant Regional Water District will supply steam electric power.
- Jacksboro, irrigation, livestock, manufacturing, and mining do not have shortages.

Kaufman County Comparison of Current Supplies to Projected Demands



Kaufman County

- Current Supplies
 - North Texas Municipal Water District (34%)
 - Terrell (20%)
 - Sabine River Authority (20%)
 - Local supplies (11%)
 - Tarrant Regional Water District (9%)
 - Groundwater (3%)
 - Reuse (2%)
 - Dallas Water Utilities (1%)

Kaufman County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

Kaufman County

- Sabine River Authority will supply Able Springs WSC and Mac Bee WSC.
- North Texas Municipal Water District will supply College Mound WSC, Crandall, Forney, Forney Lake WSC, Gastonia-Scurry, High Point WSC, Kaufman, Mesquite, Oak Grove, Talty, Terrell, county-other (portion), irrigation (portion), and manufacturing.

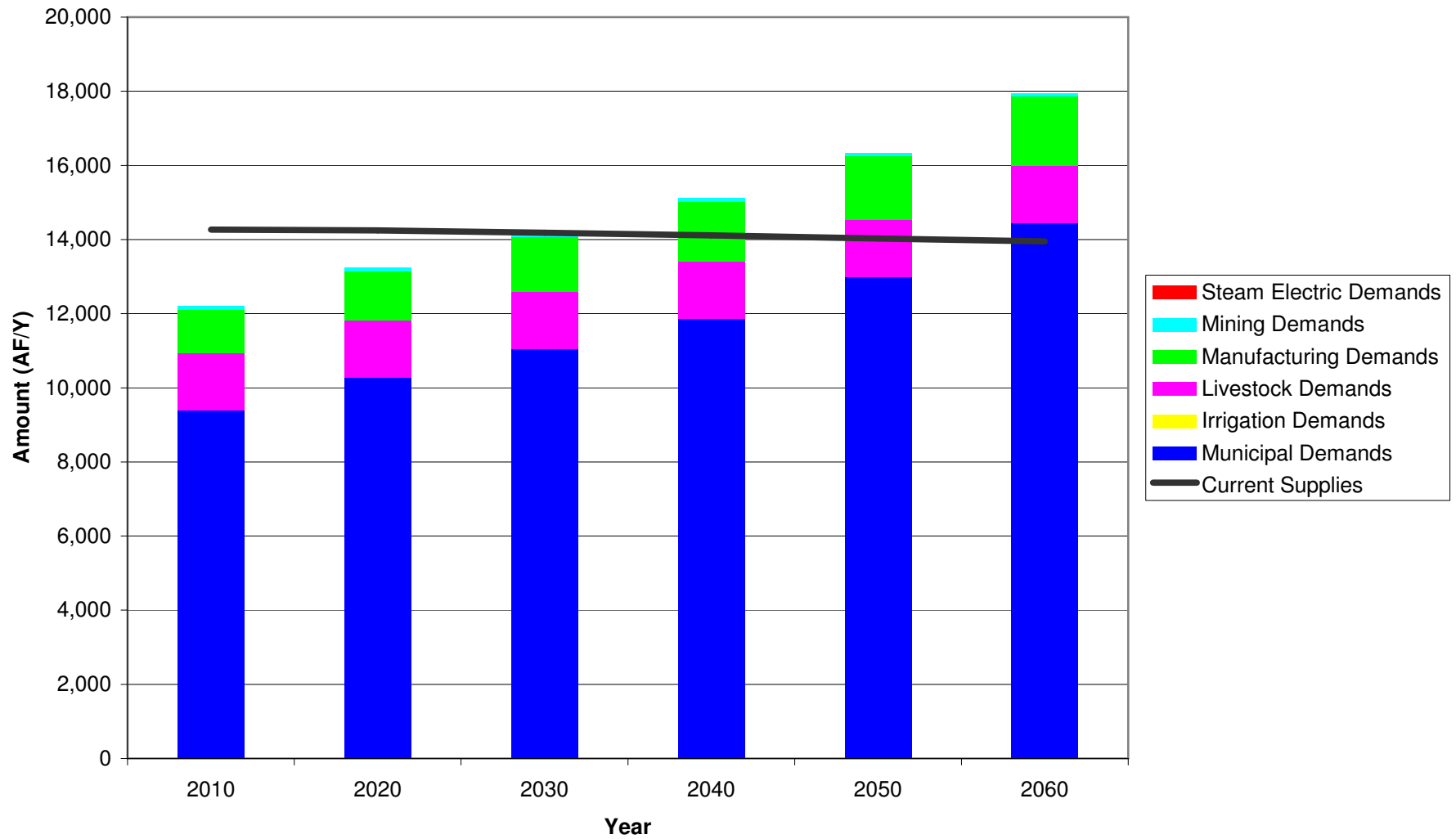
Kaufman County

- Dallas Water Utilities will supply Combine, Combine WSC, and Dallas.
- Tarrant Regional Water District will supply Kemp, Mabank, West Cedar Creek MUD, county-other (portion), & irrigation (portion).
- Terrell will supply county-other (portion).

Kaufman County

- Reuse from Forney (Garland) and TRA will be used for steam electric power.
- Seagoville, livestock, and mining do not have any shortages.

Navarro County Comparison of Current Supplies to Projected Demands



Navarro County

- Current Supplies
 - Corsicana (TRA) (76%)
 - Local supplies (13%)
 - Tarrant Regional Water District (6%)
 - Groundwater (3%)
 - Other supplies (2%)

Navarro County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

Navarro County

- Corsicana will supply Blooming Grove, Chatfield WSC, Community Water Company, Dawson, M E N WSC, Navarro Mills WSC, Rice WSC (portion), county-other (portion), manufacturing (portion) with water from the Trinity River Authority.
- Corsicana will expand their water treatment plants and connect to Richland-Chambers for future supplies.

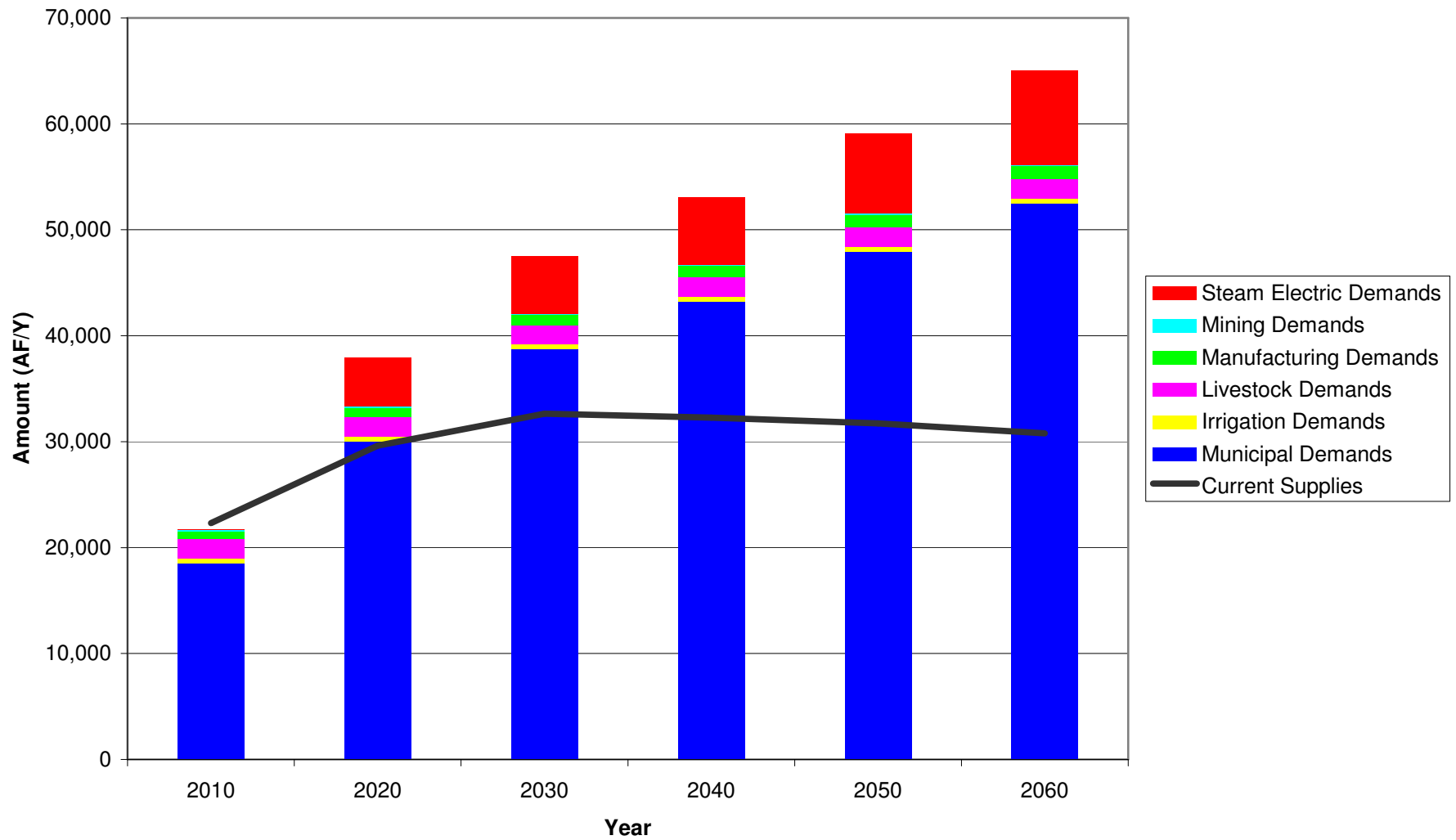
Navarro County

- Tarrant Regional Water District will supply manufacturing (portion).
- Region G will supply Brandon-Irene WSC.
- Ennis will supply Rice WSC (portion).
- Rice WSC will supply Rice.

Navarro County

- Dawson will supply county-other (portion).
- Frost, Kerens, irrigation, livestock, mining, and steam electric power do not have shortages.

Parker County Comparison of Current Supplies to Projected Demands



Parker County

- Current Supplies
 - Groundwater (36%)
 - Weatherford (24%)
 - Tarrant Regional Water District (12%)
 - Local supplies (12%)
 - Brazos River Authority (Possum Kingdom) (11%)
 - Mineral Wells (4%)
 - Reuse (1%)

Parker County

- Water conservation for all municipalities, manufacturing, and mining
- Supplemental wells for all who currently have groundwater supplies
- Overdraft the Trinity aquifer in 2010
- Water treatment plant construction/expnsions

Parker County

- Tarrant Regional Water District will supply Aledo (through Fort Worth), Azle, Fort Worth, Springtown, Reno, Walnut Creek SUD & Weatherford.
- The East Parker County System will supply Annetta, Annetta South, & Hudson Oaks.
- Willow Park to be determined

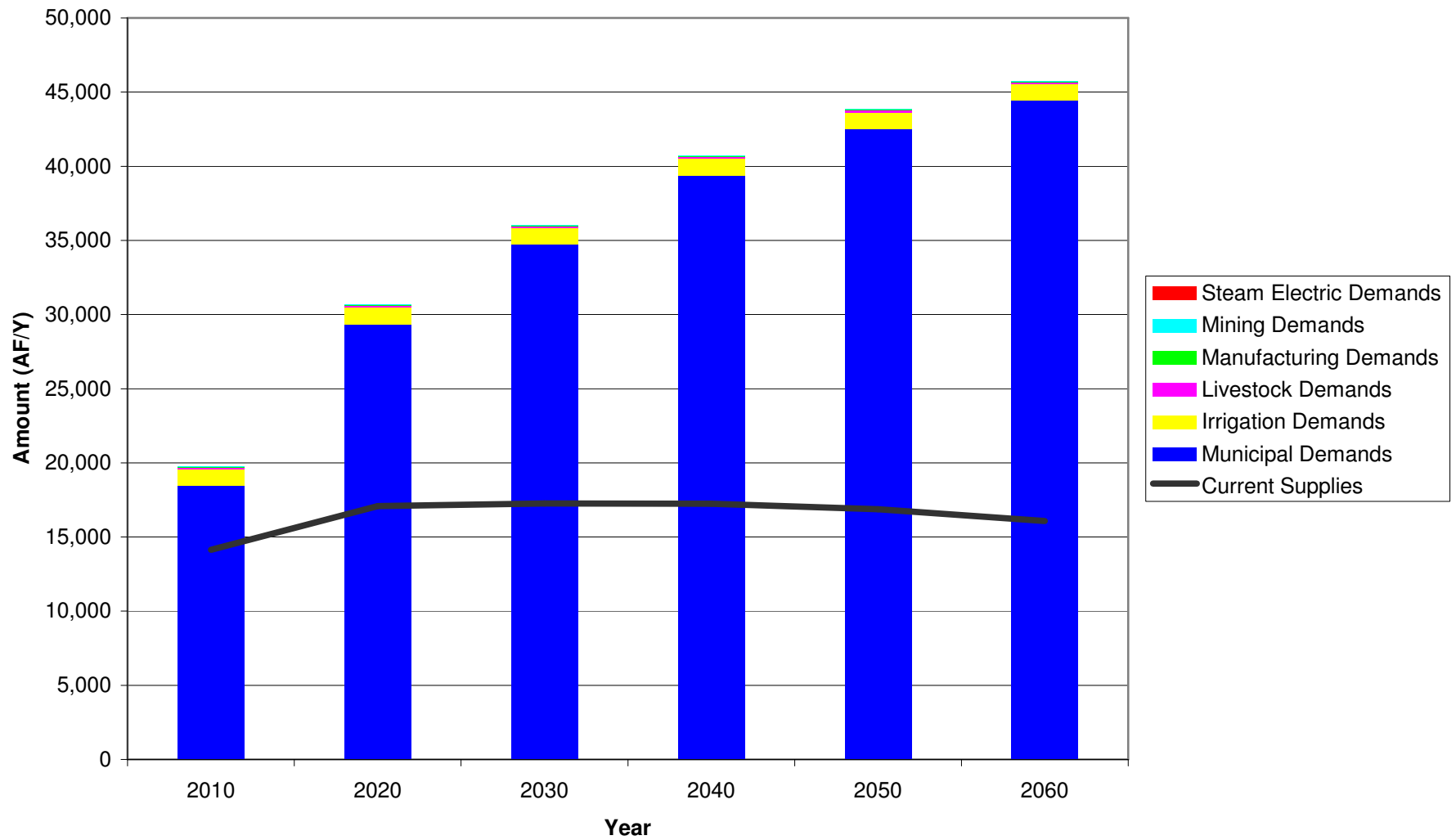
Parker County

- Weatherford will supply manufacturing (portion).
- Mineral Wells will supply manufacturing (portion).
- Weatherford will supply steam electric power (portion) with reuse.
- Brazos River Authority may supply steam electric power (portion).

Parker County

- Mineral Wells, county other, irrigation, livestock, and mining do not have shortages.

Rockwall County Comparison of Current Supplies to Projected Demands



Rockwall County

- Current Supplies
 - North Texas Municipal Water District (89%)
 - Reuse (7%)
 - Groundwater (2%)
 - Other local supplies (2%)

Rockwall County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Water treatment plant construction/expansions

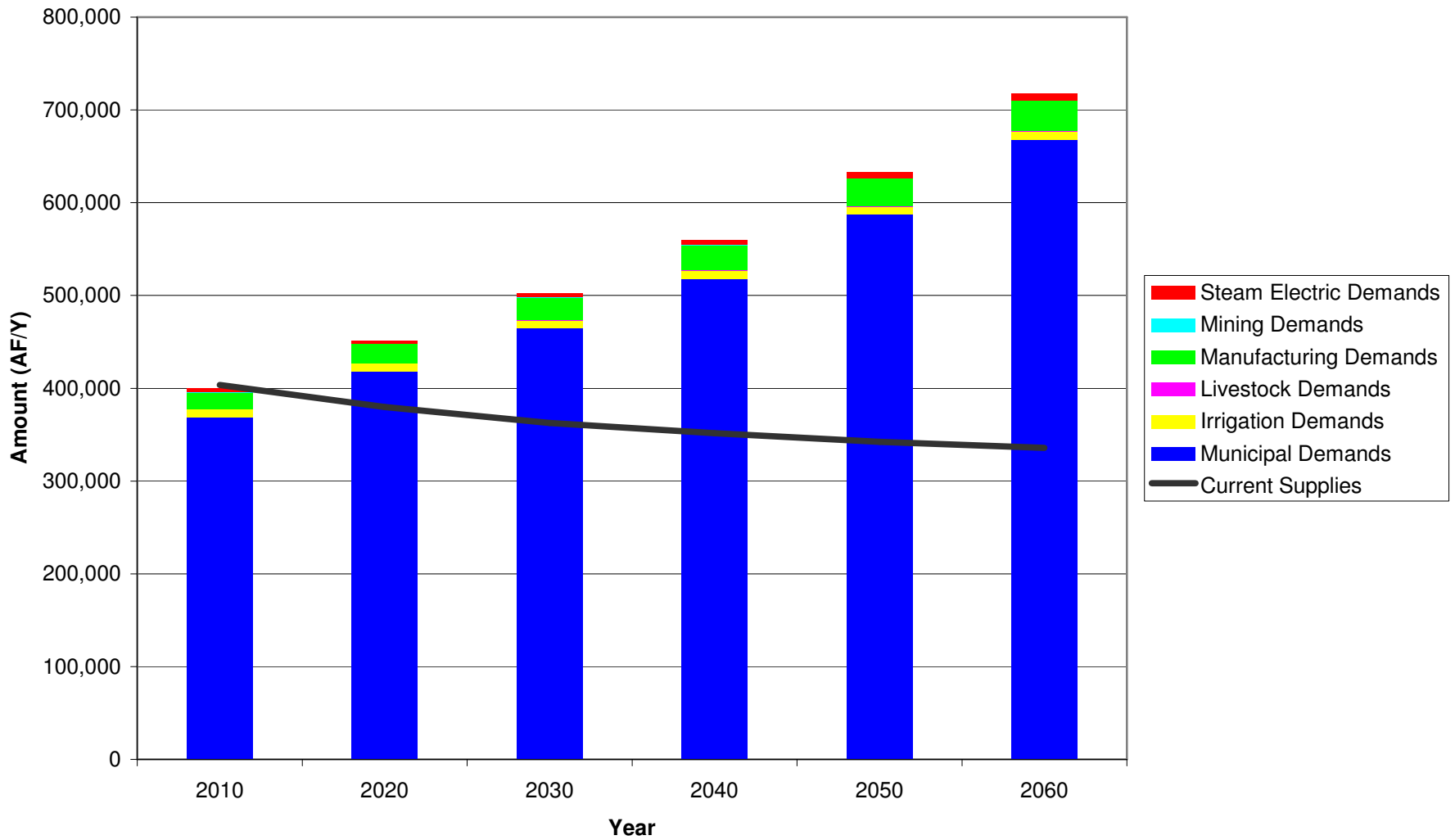
Rockwall County

- North Texas Municipal Water District will supply Blackland WSC, Cash WSC (Reg C portion), East Fork SUD, Forney Lake WSC, Heath, High Point WSC, Lavon WSC, McLendon-Chisholm, Mt. Zion, R-C-H WSC, Rockwall, Rowlett, Royse City, Wylie, county-other, and manufacturing.
- North Texas Municipal Water District will supply reuse for irrigation.

Rockwall County

- Dallas Water Utilities will supply Dallas.
- Irrigation, livestock, mining, and steam electric power do not have shortages.

Tarrant County Comparison of Current Supplies to Projected Demands



Tarrant County

- Current Supplies
 - Tarrant Regional Water District (93%)
 - Lake Arlington (2%)
 - Groundwater (2%)
 - Other local supplies (2%)
 - Reuse (1%)

Tarrant County

- Water conservation for all municipalities, manufacturing, and mining
- Supplemental wells for all who currently have groundwater supplies
- Overdraft the Trinity aquifer in 2010
- Water treatment plant construction/expansions

Tarrant County

- Tarrant Regional Water District will supply Arlington, Azle, Benbrook, Blue Mound, Community WSC, Fort Worth, Lakeside, Mansfield, River Oaks, irrigation (portion), mining, and steam electric power (portion).

Tarrant County

- Fort Worth will supply Burleson, Crowley, Dalworthington Gardens, Edgecliff Village, Everman, Forest Hill, Haltom City, Haslet, Hurst, Keller, Kennedale (portion), Lake Worth, North Richland Hills (portion), Pantego (portion), Richland Hills, Saginaw, Sansom Park Village, Southlake, Watauga, Westover Hills, Westworth Village, White Settlement, county-other, and manufacturing (portion).

Tarrant County

- Trinity River Authority will supply Bedford, Colleyville, Euless, Grapevine (portion), North Richland Hills (portion),
- Dallas Water Utilities will supply Grand Prairie (portion), Grapevine (portion), and Johnson County Rural WSC (portion).

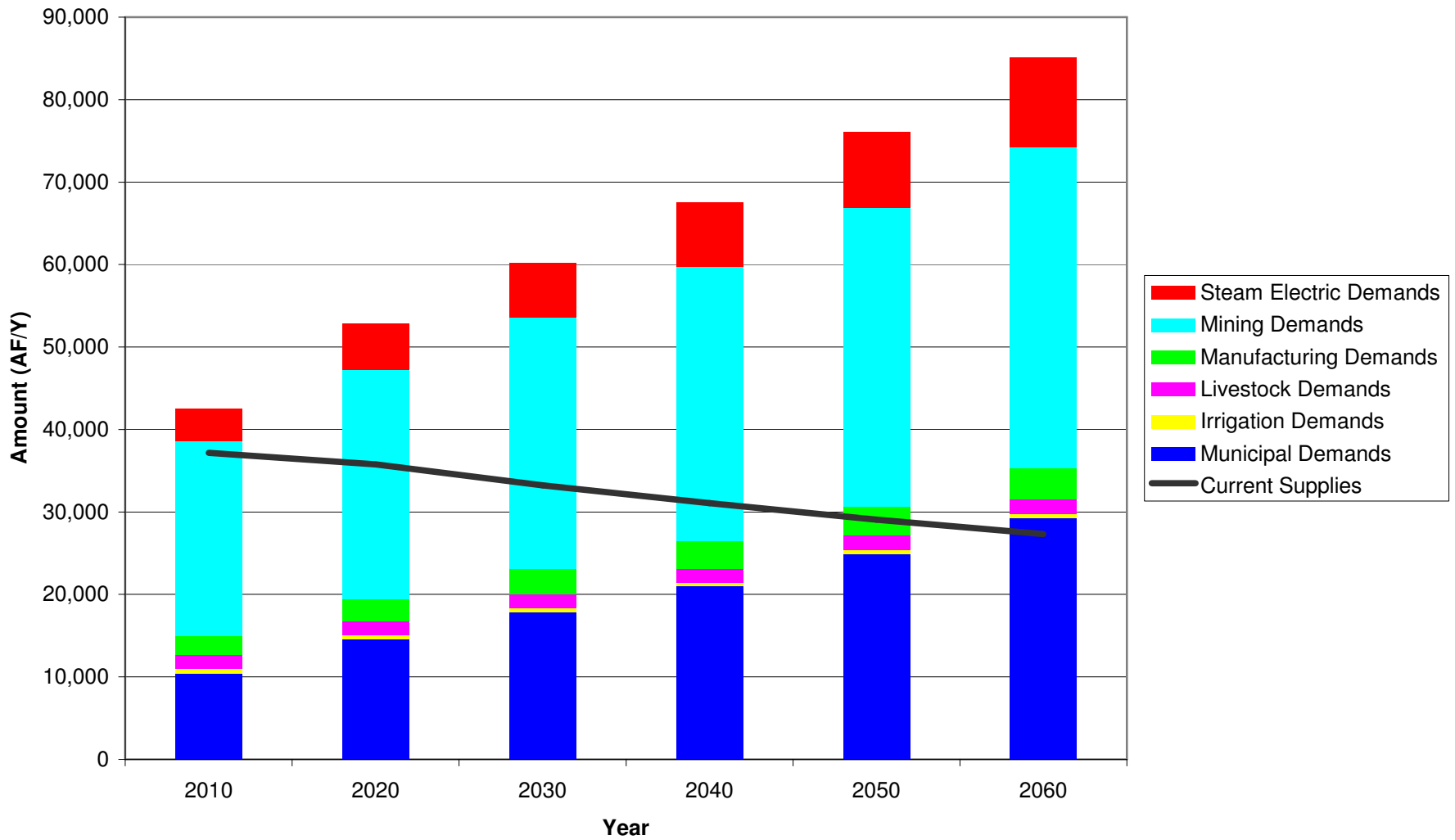
Tarrant County

- Mansfield will supply Grand Prairie (portion).
- Brazos River Authority (Region G) will supply Johnson County Rural WSC (portion).
- Arlington will supply Kennedale (portion), Pantego (portion), and manufacturing (portion).
- Argyle will supply Pelican Bay.

Tarrant County

- Irrigation (portion) and steam electric power (portion) will be supplied by reuse.
- Mansfield will supply manufacturing (portion).
- North Richland Hills will supply manufacturing (portion).
- Livestock does not have shortages.

Wise County Comparison of Current Supplies to Projected Demands



Wise County

- Current Supplies
 - Reuse (44%)
 - Tarrant Regional Water District (40%)
 - Groundwater (12%)
 - Other local supplies (4%)

Wise County

- Water conservation for all municipalities and manufacturing
- Supplemental wells for all who currently have groundwater supplies
- Overdraft the Trinity aquifer in 2010
- Water treatment plant construction/expansions

Wise County

- Tarrant Regional Water District will supply Bridgeport, Community WSC, Fort Worth, Runaway Bay, Walnut Creek SUD, West Wise Rural WSC, Wise County Water Supply District, irrigation, manufacturing, mining (portion), and steam electric power (portion).
- Wise County WSD will supply Decatur.

Wise County

- West Wise WSC will supply Alvord and Chico.
- Walnut Creek SUD will supply Aurora, Boyd, New Fairview, Newark, Rhome, and county-other.
- Greater Texoma Utility Authority will supply Bolivar WSC (portion).

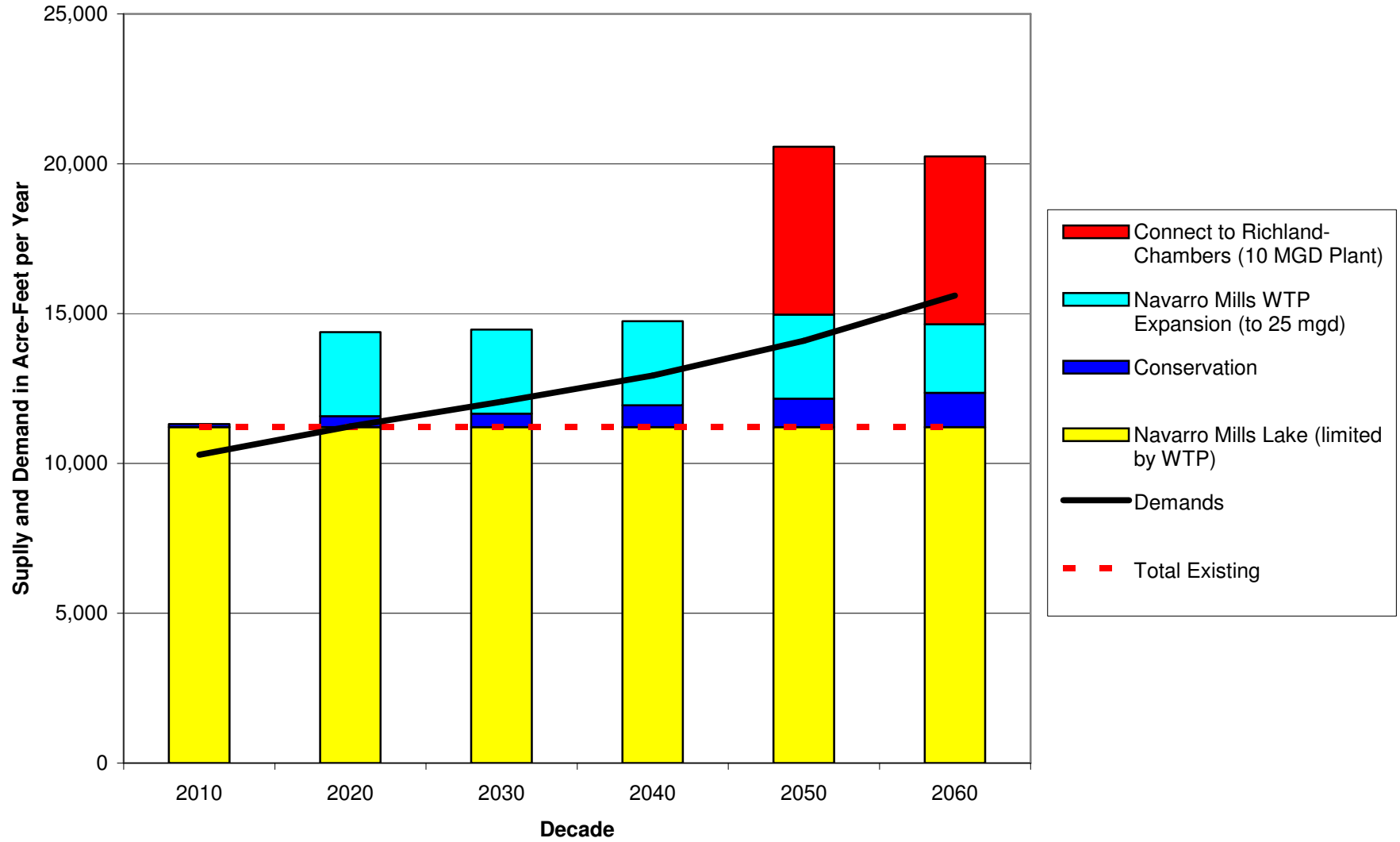
Wise County

- Upper Trinity Regional Water District will supply Bolivar WSC (portion).
- Mining (portion) will also recycle their available water.
- Bridgeport and Decatur will each supply reuse for steam electric power.
- Livestock does not have shortages.

Strategies for Wholesale Water Providers - Corsicana

- Current supply is Navarro Mills Lake and Lake Halbert (no yield)
- Future supplies
 - Water conservation
 - Water treatment plant expansion
 - Connect to Richland-Chambers Reservoir

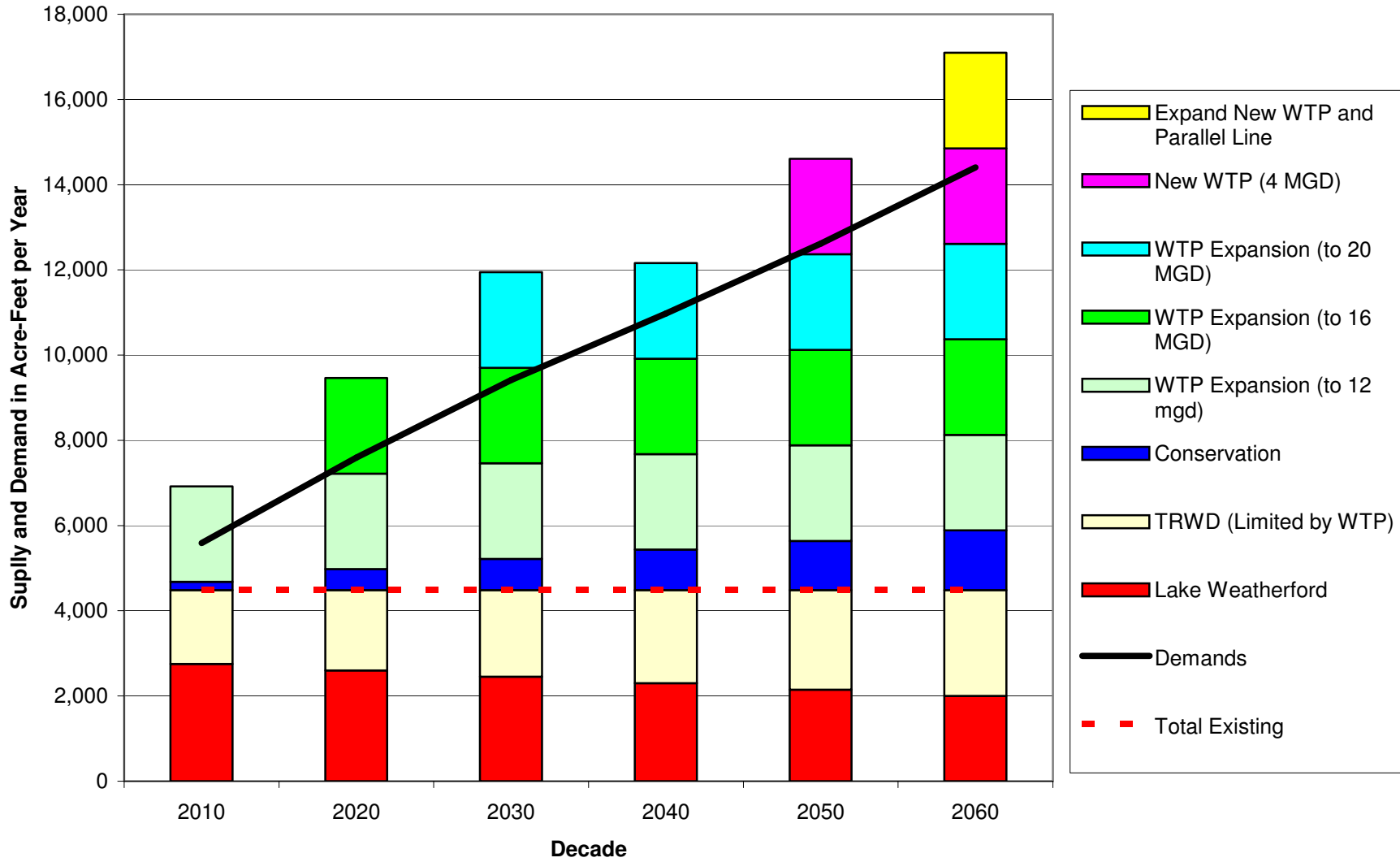
City of Corsicana



Strategies for Wholesale Water Providers - Weatherford

- Current supplies are Lake Weatherford and Tarrant Regional Water District
- Future supplies
 - Water conservation
 - Water treatment plant expansions
 - Parallel pipeline to TRWD

City of Weatherford



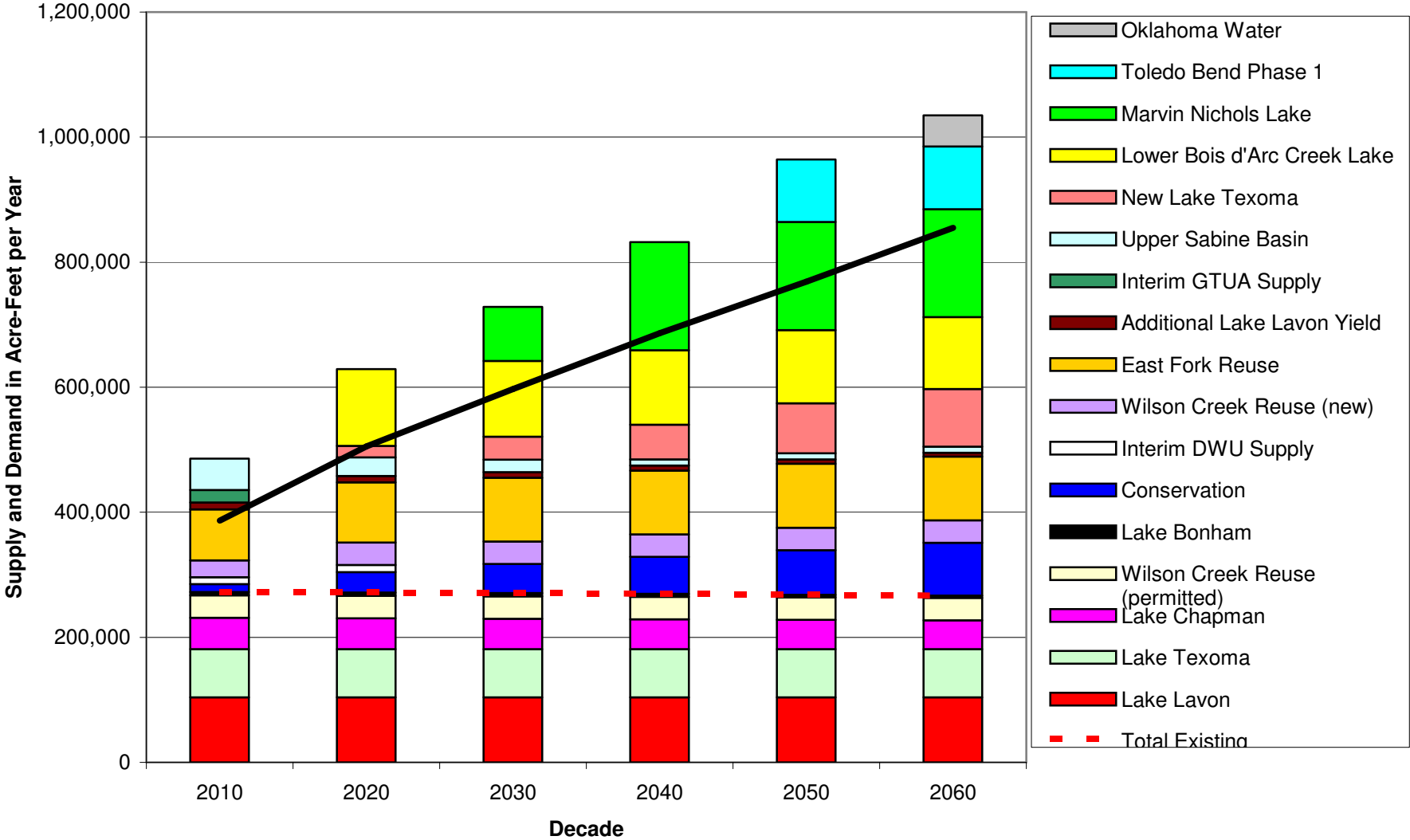
Strategies for Wholesale Water Providers – North Texas MWD

- Current supplies are Lake Lavon, Lake Texoma, Lake Chapman, reuse, Lake Bonham
- Future supplies
 - Water conservation
 - Water treatment plant expansions
 - Interim DWU supply
 - Additional Wilson Creek reuse

Strategies for Wholesale Water Providers – North Texas MWD

- East Fork reuse
- Additional Lake Lavon yield
- Interim GTUA supply
- Upper Sabine Basin
- New Lake Texoma
- Lower Bois d’Arc Creek Lake
- Marvin Nichols Lake
- Toledo Bend
- Oklahoma

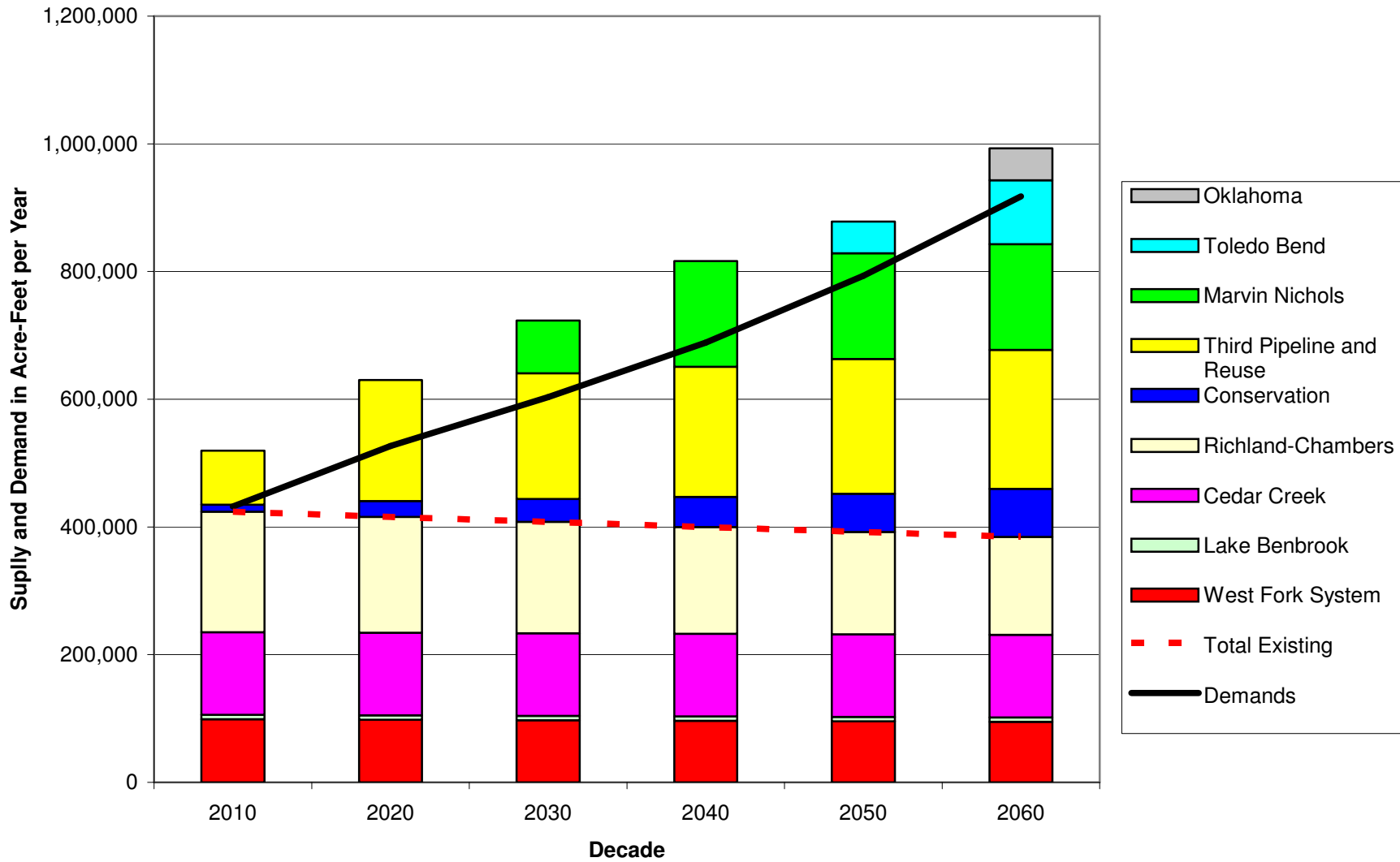
North Texas Municipal WD



Strategies for Wholesale Water Providers – Tarrant Regional WD

- Current supplies are West Fork system, Lake Benbrook, Cedar Creek, Richland-Chambers
- Future supplies
 - Water conservation
 - Eagle Mountain Connection
 - Third pipeline & reuse
 - Marvin Nichols Lake
 - Toledo Bend
 - Oklahoma

Tarrant Regional WD



Strategies for Wholesale Water Providers

- Cedar Hill supplied by Dallas Water Utilities
- Forney supplied by North Texas Municipal Water District
- Fort Worth supplied by Tarrant Regional Water District
- Garland supplied by North Texas Municipal Water District
- North Richland Hills supplied by TRA and Fort Worth

Strategies for Wholesale Water Providers

- Rockwall supplied by North Texas Municipal Water District
- Terrell supplied by North Texas Municipal Water District
- Dallas County Park Cities MUD has no shortages
- Lake Cities MUA supplied by Upper Trinity Regional Water District

Strategies for Wholesale Water Providers

- Mustang SUD supplied by Upper Trinity Regional Water District
- Parker County Utility District #1 supplied by Weatherford
- Sabine River Authority to be done by Region D
- Sulphur River Water District does not have any shortages (Region D)

Strategies for Wholesale Water Providers

- Upper Neches Municipal Water Authority does not have any shortages (Region D)
- Wise County WSD supplied by Tarrant Regional Water District

Wholesale Water Providers to be Done

- Trinity River Authority
- Upper Trinity Regional Water District
- Greater Texoma Utility District
- Dallas Water Utilities
- Waxahachie
- Athens MWA
- Denton
- Gainesville
- Walnut Creek SUD

Discussion Item

Report from the Unique
Stream Segment Committee

Discussion Item

Report from the Policy Topics
Committee

Discussion Item

Communications Update

May 2005 Newsletter

New Topics:

Overview of the Initially Prepared Plan

Options for Public Participation and Feedback on the IPP

- Where to Read the IPP
- Public Hearing
- Other Ways to Provide Feedback

Updates on the Dallas Long-Range Water Plan

Overview of TWDB's Alternative Water Management Strategies Initiative

Recurring Sections:

Conservation Corner

Info on Next RCWPG Meeting

List of RCWPG Contacts

Media/Communications Update

- Significant media interest in Dallas Water Utilities' and City of Dallas' long-range water plan, including Marvin Nichols Reservoir and Lake Fastrill
- Continued interest in water conservation initiatives
- Significant amount of public feedback related to Lake Ralph Hall and Town of Flower Mound's future water supply
- Media relations efforts will focus on editorial boards for key media over the months preceding public hearing
- Public communications/awareness efforts will focus on use of website, public notices for public hearing, media advisories regarding RCWPG meetings and public hearing, etc.

Discussion Item

Update of Overall Status &
Next Steps

Summary of Speaker Comments- January 13 Meeting

- Summary of speaker comments were posted on the Region C web site in advance of today's meeting
- www.regioncwater.org, see meeting data for 1-13-05

Update on Overall Status and Next Steps

- TWDB socio-economic evaluation
- Strategy Evaluation for each WUG & WWP
 - Infrastructure Cost
 - Strategy Impacts
 - Recommendations

Update on Overall Status and Next Steps

- Infrastructure Financing Survey
- Unique reservoir sites
- Unique stream segments
- Policy topics
- Initially Prepared Plan
- Database completion

Agenda

- Other Discussion
 - Update from the Chair
 - Report from Regional Liaisons
 - Report from TWDB
 - Confirm Date & Location of Next Meeting
 - Other Discussion
 - Acknowledgement of Guests/Comments

Thank you
for coming

Materials are available at
www.regioncwater.org

END OF PRESENTATION

FOLLOWING ARE RESERVE SLIDES