DRAFT- Dallas-Fort Worth Air Quality Improvement Plan Comprehensive Action Plan (CAP) Water and Wastewater Sector Measures
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Category	Proposed CAP Measures		Estimated % of Measure's Contribution to Category's Reduction	Implementing Agencies	Estimated Cost Per Project	Explanation of Cost Estimate	Annual Emissions Benefits Per Project (Metric Tons)				Level of Implementation in 2030	Level of Implementation 2050	Implementation Timelines	Implementation Milestones	Metrics for Tracking Progress	Emissions Benefits in 2030				Emissions Benefits in 2050				Expected Community Benefits
	Measure Name	Project					CO2e	NOx	VOC	PM2.5						CO2e	NOx	VOC	PM2.5	CO2e	NOx	VOC	PM2.5	
Measure Category 1: Watershed Management: Contributes 28% of the Goal to Reduce Emissions 25% by 2050	Provide Economic Rebates for Green Infrastructure and Water-Efficient Landscaping in Commercial Properties	Provide Economic Rebates for Green Infrastructure and Water Efficient Landscaping	0.06%	Local Governments & Water Service Providers	$ 200,000.00	Cost of rebate incentive	0.67	Unspecified	Unspecified	Unspecified	15	50	Secure funding in year 1, establish enrollees and first installations by year 3, and evaluate project in year 5	Year 5- 15 Projects; Year 15- 40 Projects; Year 25- 50 Projects	Number of enrollees; Number of installations; Outdoor irrigation gallons reduced.	9.99	Unspecified	Unspecified	Unspecified	33.30	Unspecified	Unspecified	Unspecified	New Green Space/Community Beautification; Increased Resiliency/Ability to Adapt; Improved Health and Well-Being; Increased Awareness/Engagement; Increased Resiliency/Ability to Adapt
		Update Local Policy, Codes, Drainage Criteria and Ordinances			$ -	N/A	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	5	45	Ordinance introduced and public hearing conducted in year 1, Ordinance approved and executive governing body signs ordinance in years 2 and 3. Project evaluated in year 5 for its impact on water usage.	Year 5- 5 Projects; Year 15- 30 Projects; Year 25- 45 Projects	Number of draft ordinance proposals introduced; Number of ordinances adopted	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	New Green Space/Community Beautification; Increased Resiliency/Ability to Adapt; Improved Health and Well-Being; Increased Awareness/Engagement; Increased Resiliency and Adaptability
		Install Smart Controls and Sensors to LID and Green Infrastructure to Analyze and Quantify Stormwater Collection Efforts			~$.75 per sq foot of infrastructure	Cost of capital acquirement and installation	0.97	Unspecified	Unspecified	Unspecified	25	100	Secure funding for sensors and controls by year 2, procure vendors by year 3 and beging first installations by year 4, and evaluate in year 5	Year 5- 25 Projects; Year 15- 50 Projects; Year 25- 100 Projects	Gallons of irrigation water reduced per installation	24.30	Unspecified	Unspecified	Unspecified	97.20	Unspecified	Unspecified	Unspecified	Green Spaces and Community Beautification, Job Creation and Economic Development, Increased Safety; Water Conservation; Increased Health and Well-Being; Increased Resiliency and Adaptability
		Update Building Standards for New Developments to Reduce Outdoor Irrigation Requirements			$ -	N/A	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	5	45	Ordinance introduced and public hearing conducted in year 1, ordinance approved and executive governing body signs ordinance in years 2 and 3, project evaluated in year 5 for its impact on water usage.	Year 5- 5 Projects; Year 15- 30 Projects; Year 25- 45 Projects	Number of new building standards adopted	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Water Conservation; Increased Resiliency and Adaptability
	Increase Acreage of Native Plantings in Riparian Corridor Ecosystems	Restore, Protect and Maintain Riparian Corridor Ecosystems	0.07%	Local Governments & Applicable Water Districts	$ 4,000,000.00	Cost of planting materials, supplies, and installation	11.00	Unspecified	Unspecified	Unspecified	5	15	Secure funding in year 1, procure vendors by year 3, complete installations by year 5, conduct maintenance and evaluations by year 5.	Year 5- 5 Projects; Year 15- 10 Projects; Year 25- 15 Projects	Acres of native plants installed	55.00	Unspecified	Unspecified	Unspecified	165.00	Unspecified	Unspecified	Unspecified	Green Spaces and Community Beautification; Improved Health and Well- Being; Increased Safety
	Construct Stormwater Detention Basins	Construct Stormwater Detention Basins	25%	MS4 Permit Holders & Applicable Water Districts	$ 4,000,000.00	Cost of construction equipment and dredging.	2005.44	1.02	0.04	0.10	2	25	Secure funding by year 1, site assessment and design complete by year 2, site preparation and excavation by year 4, installation and stabilization by year 5.	Year 5- 2 Projects; Year 15- 15 Projects; Year 25- 25 Projects	Gallons of water stored and infiltrated	4010.89	2.0	0.1	0.2	50136.12	25.40	0.91	2.61	Job Creation and Economic Development; Increased Resiliency and Adaptability
	Update Stormwater & Wastewater Conveyance Infrastructure	Install Smart Manhole Covers	2.57%	MS4 Permit Holders, Wastewater Service Providers	$ 40,000,000.00	Cost of manhole covers and installation	0.03	Unspecified	Unspecified	Unspecified	20	200	Site selection and secure funding by year 1, procure equipment by year 2, installation and evaluation by year 5	Year 5- 20 Projects; Year 15- 100 Projects; Year 25- 200 Projects	Number of blockages and leaks detected	0.56	Unspecified	Unspecified	Unspecified	5.60	Unspecified	Unspecified	Unspecified	Improved Health and Well-Being; Water Conservation; Increased Resiliency and Adaptability
		Phase Out Traditional Pipe Repair in Favor of Trenchless Pipe Rehabilitation			$ 8,000,000.00	Cost of CIPP system supplies	11.40	Unspecified	Unspecified	Unspecified	15	500	Secure funding by year 1, procure CIPP systems by year 2, train staff on new process by year 3, evaluate processes by year 5	Year 5- 15 Projects; Year 15- 100 Projects; Year 25- 500 Projects	Number of projects completed with new process	171.00	Unspecified	Unspecified	Unspecified	5700.00	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability

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	Measure Name	Project					CO2e	NOx	VOC	PM2.5						CO2e	NOx	VOC	PM2.5	CO2e	NOx	VOC	PM2.5	
Measure Category 2: Water & Wastewater Treatment Infrastructure: Contributes 40% of the Goal to Reduce Emissions 25% by 2050	Improve Water & Wastewater Treatment Process Efficiency	Benchmark Utility Energy Consumption using Energy Star Portfolio Manager or Similar Tools**	40%	Water & Wastewater Service Providers	$0 through Energy Star. Fees may vary for other services.	Energy Star Portfolio Manager is a free service	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	20	75	Secure needed funding in year 1, Procure vendor by year 2, benchmark for one year, evaluate service by year 5	Year 5- 20 Projects; Year 15- 50 Projects; Year 25- 75 Projects	Number of utilities undergoing annual benchmarking	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Job Creation and Economic Development; Increased Awareness and Engagement
		Develop Strategic Energy Management and Conservation Plan for Water Utilities**			$10,000.00-$20,000.00	Cost of consultant fees and software for benchmarking.	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	5	45	Secure needed funding in year 1, Procure vendor by year 2, complete necessary assessments by year 3, design and develop energy conservation plan by year 4, evaluate service by year 5	Year 5- 5 Projects; Year 15- 20 Projects; Year 25- 45 Projects	Number of plans developed	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Job Creation and Economic Development; Increased Awareness and Engagement
		Update Aging Water/Wastewater Treatment Plant Infrastructure**			$ 2,500,000.00	Cost of design, strategic planning, equipment, and installation	81.67	0.04	Unspecified	Unspecified	20	75	Secure needed funding in year 1, Procure vendor by year 2, complete installations and construction by year 5	Year 5- 20 Projects; Year 15- 50 Projects; Year 25- 75 Projects	Annual kWhs reduced after upgrade	1633.39	0.82	Unspecified	Unspecified	6125.23	3.06	Unspecified	Unspecified	Increased Resiliency and Adaptability
		Increase On-Site Renewable Energy on Water/Wastewater Treatment Plant Sites**			$ 5,000,000.00	Cost of design, strategic planning, equipment, and installation	2884.70	Unspecified	Unspecified	Unspecified	5	20	Secure needed funding in year 1, Procure vendor by year 2, complete installations and construction by year 5	Year 5- 5 Projects; Year 15- 12 Projects; Year 25- 20 Projects	Annual kWhs reduced after upgrade	14423.50	Unspecified	Unspecified	Unspecified	57693.98	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability; Improved Health and Well-Being
		Implement Bio-Gas Capture & Reuse in Wastewater Treatment Plants			$ 3,500,000.00	Cost of design, strategic planning, equipment, and installation	740.00	Unspecified	Unspecified	Unspecified	5	35	Secure needed funding in year 1, Procure vendor by year 2, complete installations and construction by year 5	Year 5- 5 Projects; Year 15- 20 Projects; Year 25- 35 Projects	Annual kWhs produced from biogas capture	3700.00	Unspecified	Unspecified	Unspecified	25900.00	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability
Measure Category 3: Wastewater Infrastructure: Contributes 15% of the Goal to Reduce Emissions 25% by 2050	Repair Aging or Failing On-site Sewage Facility Systems	Provide Financial Rebates to Upgrade OSSF	0.004%	Authorized Permitting Authorities	$ 8,000.00	Cost of drain field, pipes, and installation	0.16	0.08	Unspecified	Unspecified	15	50	Secure funding in year 1, identify sites in need of upgrade by year 3, procure equipment and vendors by year 4, complete first phase of upgrades by year 5.	Year 5- 15 Projects; Year 15- 30 Projects; Year 25- 50 Projects	Annual number of system failures avoided through repair	2.34	1.17	Unspecified	Unspecified	7.80	3.90	Unspecified	Unspecified	Improved Health and Well-Being; Increased Resiliency and Adaptability; Job Creation and Economic Development
	Provide Sanitary Sewage Upgrades in Developing Areas with Existing On-Site Sewage Facility Systems	Provide Sanitary Sewage Upgrades in Developing Areas with Existing On-Site Sewage Facility Systems	0.002%	Wastewater Service Providers	$ 6,000,000.00	Cost of sewer lines, hookup equipment and installation	0.0074	Unspecified	0.004	Unspecified	50	500	Secure funding in year 1, identify sites to connect to wastewater system by year 2, procure equipment and vendors by year 4, complete first phase of connections and decommissioning on septic system by year 5	Year 5- 50 Projects; Year 15- 75 Projects; Year 25- 500 Projects	Annual number of systems decommissioned due to the transition to wastewater service	0.37	Unspecified	0.22	Unspecified	3.70	Unspecified	2.18	Unspecified	Improved Health and Well-Being; Increased Resiliency and Adaptability; Job Creation and Economic Development ;
	Improve Bio-Solids Management	Convert Biosolids From Wastewater Treatment into Biochar	14%	Wastewater Service Providers	$ 15,000,000.00	Cost of pyrolysis equipment	43.56	Unspecified	Unspecified	Unspecified	10	40	Secure funding by year 1, procure pyrolisis systems by year 3, install and train staff on new process by year 5, evaluate project in year 6.	Year 5- 10 Projects; Year 15- 30 Projects; Year 25- 40 Projects	Acres of biochar application	435.60	Unspecified	Unspecified	Unspecified	1742.40	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability
		Divert Biosolids from Wastewater Treatment into Waste-to-Energy Facilities				Cost of biogas storage and processing infrastructure	740.00	Unspecified	Unspecified	Unspecified	10	40	Secure funding by year 1, procure vendors and storage equipment by year 3, installation complete by year 4, train staff on new process by year 5.	Year 10- 5 Projects; Year 15- 30 Projects; Year 25- 40 Projects	Amount of biogas diverted to facility	7400.00	Unspecified	Unspecified	Unspecified	29600.00	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability
	Implement Methods for Non-Potable Water Reuse	Implement Methods for Non-Potable Water Reuse	1%	Wastewater Service Providers	$ 50,000,000.00	Cost of pipelines and processing infrastructure	36.30	0.02	Unspecified	Unspecified	15	50	Secure funding by year 1, procure vendors and processing infrastructure by year 2, complete installation by year 5, evaluate in year 6.	Year 5- 15 Projects; Year 15- 30 Projects; Year 25- 50 Projects	Gallons diverted for reuse annually	544.46	0.27	Unspecified	Unspecified	1814.88	0.91	Unspecified	Unspecified	Improved Health and Well-Being; Increased Resiliency and Adaptability; Water Conservation

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	Measure Name	Project					CO2e	NOx	VOC	PM2.5						CO2e	NOx	VOC	PM2.5	CO2e	NOx	VOC	PM2.5	
Measures Category 4: Water Resources: Contributes 17% of the Goal to Reduce Emissions 25% by 2050	Implement Building-Scale Rainwater Harvesting for Commercial and Municipal Buildings	Implement Building-Scale Rainwater Harvesting for Commercial and Municipal Buildings	1%	Commercial and Municipal Property Owners	$ 5,000.00	Cost of cistern, gutters, filters, and treatment equipment	150.00	Unspecified	Unspecified	Unspecified	30	150	Secure funding by year 1, procure vendors and storage infrastructure by year 2, complete installation by year 5, evaluate in year 6.	Year 5- 30 Projects; Year 15- 75 Projects; Year 25- 150 Projects	Rainwater installations, gallons of irrigation water reduced	4500.00	Unspecified	Unspecified	Unspecified	22500.00	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability; Improved Health and Well-Being; Water Conservation
	Improve Local Water Conservation	Utilize Automated Metering Infrastructure to Identify and Repair Potential Sources of Water Loss	16%	Water Service Providers	$ 20,000,000.00	Cost of metering system	18.15	0.01	Unspecified	Unspecified	5	45	Secure funding in year 1, procure new metering systems by year 3, complete new meter hookups by year 4, train staff and evaluate project by year 5.	Year 5- 5 Projects; Year 15- 30 Projects; Year 25- 45 Projects	Number of leaks detected annually	90.74	0.05	Unspecified	Unspecified	816.70	0.41	Unspecified	Unspecified	Increased Resiliency and Adaptability; Water Conservation; Increased Awareness and Engagement
		Conduct a study on regional Aquifer Storage and Recovery Potential			$ 6,000,000.00	Cost of land and equipment associated with construction of project	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	1	1	Secure funding in year 1, purchase land if needed in year 2, establish vendors relevant to the study and identify site for pilot study in year 3, install necessary infrastructure by year 5, evaluate annual water storage in year 6.	Year 5- 1 Project	Establishment of storage potential	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Not Quantifiable	Improved Resiliency and Adaptability
		Develop Aquifer Protection and Land Preservation Efforts			$ 1,500,000.00	Cost of land	245.01	0.12	Unspecified	0.01	3	50	Secure funding in year 1, purchase land if needed in year 2, complete site assessment and system design in year 3, install necessary infrastructure by year 5, evaluate annual water storage in year 6.	Year 5- 3 Projects; Year 15- 30 Projects; Year 25- 50 Projects	Gallons of water stored in aquifer system	735.03	0.37	Unspecified	0.04	12250.45	6.12	Unspecified	0.68	Increased Resiliency and Adaptability; Improved Health and Well-Being
		Establish Property Water Conservation Audits and Smart Water Rebate Programs			$ 460,000.00	Cost of rebates and auditing	108.89	0.05	Unspecified	0.005	20	100	Secure funding in year 1, establish enrollees in year 2, conduct first audits in year 3, evaluate project and rebates by year 5.	Year 5- 20 Projects; Year 15- 30 Projects; Year 25- 100 Projects	Number of audits conducted. Gallons of water reduced per Water User Group	2177.86	1.09	Unspecified	0.09	10889.29	5.44	Unspecified	0.45	Increased Resiliency and Adaptability; Improved Health and Well-Being; Water Conservation; Reduced Costs; Increased Awareness and Engagement
		Implement Municipal and Commercial Irrigation Repair Programs			Audits are sometimes free of charge on behalf of utilities. Can cost between $75-$300 per repair, depending on the number of irrigation zones	Repair costs	130.00	Unspecified	Unspecified	Unspecified	25	75	Secure funding in year 1, establish vendors in year 2, conduct audits in year 3, complete repairs from the first round of audits in year 4, evaluate project in year 5.	Year 5- 25 Projects; Year 15- 30 Projects; Year 25- 75 Projects	Number of repairs made; Gallons of irrigation water reduced	3250.00	Unspecified	Unspecified	Unspecified	9750.00	Unspecified	Unspecified	Unspecified	Increased Resiliency and Adaptability; Improved Health and Well-Being; Water Conservation; Reduced Costs; Increased Awareness and Engagement

Measures Removed from DFW AQIP CAP: Water & Wastewater Sector		
NA	Expand Contamination Detection and Pollution Prevention Measures	Measure Removed From Plan; The CAP is focused on the implementation of measures which provide quantifiable air quality benefits. This measure does not provide quantifiable benefits.
	Pursue Energy-Efficient Disinfection Processes	Measure Removed From Plan; Energy-efficient processes are already addressed elsewhere in this sector; therefore, this measure was not needed.
	Update Bio-Solids Management from Wastewater Treatment for Placement into Low Carbon Soils to Sequester Carbon Through Landfarming	Measure Removed From Plan; There are current concerns about PFAS contamination related to biosolids and land application.