FINAL REPORT

FEASIBILITY STUDY FOR THE DEVELOPMENT OF A REGIONAL WATER PRODUCTION UTILITY

Summary Report

BLACK & VEATCH PROJECT NO. 184920

PREPARED FOR

Central Iowa Regional Drinking Water Commission

21 JULY 2015

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Table of Contents

1 Executive Summary 1
1.1 Purpose 1
1.2 Special Notice 1
1.3 Scope 2
1.4 Stakeholder Input and SWOT Analysis 2
1.4.1 Stakeholder Input 2
1.4.2 SWOT Analysis 3
1.5 Valuation Estimate 4
1.5.1 Asset Inventory 5
1.5.2 Estimated Range of Value 6
1.6 Financial Analysis 7
1.6.1 Net Value Analysis 7
1.6.2 Development of Five Year Financial Projection 9
1.6.3 Analysis of Effective Rate 10
1.6.4 Future Considerations 11
1.7 Governance 12
1.7.1 Potential Initiating Principles 12
1.7.2 Key Governance Issues 12
1.7.3 Governance Alternatives 13
1.8 Conclusion 14
2 Introduction 16
2.1 Participants 16
2.2 Scope of Work 17
3 Stakeholder Input and SWOT Analysis 18
3.1 Stakeholder Input 18
3.1.1 Input 18
3.1.2 General Takeaways 19
3.2 SWOT Analysis 20
3.2.1 Input Into Feasibility Study 23
4 Valuation Estimate 25
4.1 Development of Asset Inventory 25
4.1.1 Asset Inventory 26
4.1.2 Asset Inspection 31
4.1.3 Asset Review 31
4.2 Estimation of Original Cost Less Depreciation (OCLD) 32

4.2.1 Original Cost 33
4.2.2 Accumulated Depreciation 33
4.2.3 OCLD Results 34
4.3 Estimation of Replacement Cost Less Depreciation (RCLD) 36
4.3.1 Replacement Cost 37
4.3.2 Accumulated Depreciation 37
4.3.3 RCLD Results 38
4.4 Combined Estimate of Valuation 40
4.5 Estimate of Purchased Capacity Value 41
4.6 Other Contributed DMWW Assets 43
4.6.1 Joint East Side Project 43
4.6.2 Polk City Feeder Main 43
4.6.3 Ankeny Contribution to SWTP Feeder Main 43
4.6.4 WDMWW 98th Street Elevated Storage Tank 44
4.6.5 L.P. Moon Storage and Booster Station 44
4.7 Valuation Conclusion 44
5 Financial Analysis 45
5.1 Net Value Analysis 45
5.1.1 Summary of Estimated Value and Net Value per MGD 45
5.1.2 Alignment of Net Value by Entity 48
5.1.3 Summary of Net Value Analysis 50
5.2 Development of Five Year Financial Projection 51
5.2.1 Operation and Maintenance Expense 52
5.2.2 Annual Renewal and Replacement 53
5.2.3 Major Capital Improvement Costs 53
5.2.4 Repayment of Outstanding Purchase Capacity Debt 54
5.2.5 Adjustment to Des Moines Water Works' Net Value 54
5.2.6 Major Capital Improvement Financing 54
5.2.7 Projection of Annual Revenue Requirements and Effective Rate 55
5.2.8 Financing alternatives 58
5.2.9 Effective Rate sensitivity 59
5.3 Analysis of Effective Rate 60
5.3.1 Future Considerations 61
5.3.2 Communities That Opt Out 63
5.4 Financial Analysis Conclusion 63
6 Governance 64
6.1 Potential Initiating Principles 64

6.2 Key Governance Issues 65
6.2.1 Voting Rights 65
6.2.2 Board Makeup 66
6.3 Governance Alternatives 68
6.3.1 Traditional Municipal Governance 68
6.3.2 Modification of Current Governance Arrangement 70
6.3.3 Public Private Partnership 71
7 Next Steps 73
7.1.1 Short Term 73
7.1.2 Long Term 74
Appendix A ..... A
Appendix B ..... B
Appendix C C

LIST OF TABLES

Table 1-1 Summary of Total Capacity and Firm Capacity 5
Table 1-2 Summary of Estimated Valuation 6
Table 1-3 Summary of Net Value per MGD by Entity 7
Table 1-4 Summary of Alignment of Net Value per MGD by Entity 8
Table 1-5 Breakdown of Total Mid Range Value 9
Table 1-6 Estimate of Projected Revenue Requirements 9
Table 1-7 - Estimated Effective Rate 10
Table 1-8 - Effective Rate Comparison 10
Table 1-9 Future Expansion Example 11
Table 2-1 Full Service and Wholesale Customers of DMWW 16
Table 4-1 Total Source and Supply Assets for Regional Utility 29
Table 4-2 Distribution System Storage and Pump Station Assets 30
Table 4-3 Des Moines Water Works Transmission Main Assets 31
Table 4-4 Treatment Asset Strengths and Weaknesses Review 32
Table 4-5 Estimated OCLD Value of DMWW Assets 35
Table 4-6 Estimated OCLD Value for WDMWW Assets 36
Table 4-7 Estimated OCLD Value for Urbandale WW, Altoona, and Ankeny 36
Table 4-8 RCLD Results for DMWW 39
Table 4-9 RCLD Results for WDMWW 40
Table 4-10 RCLD Results for Urbandale Water Works, Ankeny, and Altoona 40
Table 4-11 Combined Estimate of Valuation 41
Table 4-12 Summary of Current Purchased Capacity Amounts and Original Contribution 42
Table 4-13 Estimated Range of Purchased Capacity Value for Wholesale Customers 43
Table 5-1 Summary of Total Capacity, Value, and Net Value by Entity (Mid Range Value) 46
Table 5-2 Purchased Capacity Mid Range Value by Customer 47
Table 5-3 Alignment of Net Value per Total Capacity by Entity 49
Table 5-4 Summary of Alignment of Net Value and Total Capacity 50
Table 5-5 Summary of Net Value or Equity 51
Table 5-6 Proposed Operation & Maintenance Expense 52
Table 5-7 Projected Renewal and Replacement 53
Table 5-8 Major Capital Improvement Program 54
Table 5-9 Estimated Capital Financing Plan 55
Table 5-10 Summary of Revenue Requirements and Unit Cost Development 56
Table 5-11 Projected Billed Water Usage 57

Table 5-12 Alternative Revenue Requirements and Unit Cost Development 59
Table 5-13 Rate Sensitivity Comparison 60
Table 5-14 Effective Rate Comparison 61
Table 5-15 Future Expansion Example 62
Table 6-1 Hypothetical Weighted Vote Based on % of Net Value 66

LIST OF FIGURES

Figure 1 SWOT Analysis Matrix 21

1 Executive Summary

1.1 PURPOSE

Black & Veatch Corporation (Black & Veatch) and its subconsultant HR Green, Inc. (HR Green) were retained by the Central Iowa Regional Drinking Water Commission (CIRDWC) to assess the feasibility of forming a regional water production utility (Regional Production Utility) for the Greater Des Moines, Iowa region. The feasibility study (Study) outlined in this report (Report) includes the following specific elements:

- Receipt of input from CIRDWC members with respect to the current method of regional water supply, as well as input related to the merits and drawbacks of forming a Regional Production Utility.
- Conduct of a Strengths, Weaknesses, Opportunities, and Threats analysis to compare the benefits and drawbacks of providing regional water service under the current method, versus providing water service via a Regional Production Utility.
- Estimation of fair market value of assets that would comprise the regional water production entity.
- Analysis of the financial impact on customers of moving to a Regional Production Utility.
- Analysis of elements related to governance of the Regional Production Utility and assessment of potential governance alternatives.

The Study and results outlined in this Report did not include a legal assessment of the feasibility of forming a regional water production entity. The Study provides a base feasibility assessment that includes an estimate of the financial impact on customers compared to their current wholesale service arrangements with Des Moines Water Works (DMWW). From this base feasibility assessment, CIRDWC members can then determine whether it is in their interest to further pursue a Regional Production Utility. If a Regional Production Utility is pursued by CIRDWC members beyond this Study, it is anticipated that additional financial, legal, and engineering analysis would be necessary.

1.2 SPECIAL NOTICE

In conducting this study, Black & Veatch reviewed documents, records, agreements, capital improvement programs, and financial information for CIRDWC members as deemed necessary. While Black & Veatch considers such documents, records, and projections to be reliable, the accuracy of these documents has not been verified.

The recommendations set forth in this Report below include “forward-looking statements”. In formulating these projections and/or recommendations, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances which may or may not occur in the future. The methodology used in performing the analyses follows generally accepted practices for such projections. Such assumptions and methodologies are reasonable and appropriate for the purpose for which they are used. While Black & Veatch believes the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected as influenced by the conditions, events, and circumstances which actually occur. Such factors may

include (1) the ability of CIRDWC members to execute their financial and capital improvement programs as scheduled and within budget, (2) regional climate and weather conditions affecting water use, and (3) adverse legislative, regulatory or legal decisions (including environmental laws and regulations) affecting their ability to manage their systems to meet water quality requirements, or other regulatory requirements.

1.3 SCOPE

The Study was conducted per the Scope of Work outlined in the Consulting Services Agreement between Black & Veatch and CIRDWC dated June 27, 2014. The general elements of the Scope of Works are as follows:

- Collect and review data related to financial, operational, and asset information to gain an understanding of the current methodology used to provide drinking water service to the Greater Des Moines region.
- Conduct stakeholder input sessions with CIRDWC members to gain an understanding of their current operations, as well as to receive their input with respect to the Study and the formation of a potential regional water production entity.
- Conduct SWOT analysis with CIRDWC members to understand the benefits and drawbacks of forming a Regional Production Utility versus the current wholesale service arrangement.
- Perform estimate of fair market value of assets that would comprise the Regional Production Utility using the Cost Approach methodology of valuation.
- Perform a financial analysis to determine the potential impact on wholesale customer rates under a Regional Production Utility.
- Evaluate three potential governance alternatives, including issues of potential board composition, voting rights, and responsibilities.

1.4 STAKEHOLDER INPUT AND SWOT ANALYSIS

1.4.1 Stakeholder Input

Black & Veatch interviewed CIRDWC members over several days in July 2014. A questionnaire was prepared by Black & Veatch that focused on questions and issues related to 1) general characteristics of community and water utility; 2) local strategy with respect to anticipated growth and future water needs; 3) input on benefits and drawbacks of forming a Regional Production Utility; 4) financial and rate issues for member's water utility; and 5) general input with respect to the Study. Appendix A presents a copy of the questionnaire provided to CIRDWC members.

Key takeaways from the stakeholder input sessions include:

- The majority of members that currently receive their water service from DMWW are expecting steady growth in population over the coming years.
- There are multiple planning initiatives for growth and economic development being conducted throughout the Des Moines metro area. While communication between DMWW and regional communities does occur with respect to water issues, there is no coordinated, regional planning with respect to developing future water supply to meet projected demands.

- Current wholesale customers are very interested in having more representation in the future development and provision of water service in the Greater Des Moines region.
- Generally, members indicated that governance with proportionate representation would be acceptable in any new regional water production entity. There were a small number of participants that advocated for a one member, one vote approach to governance.
- Current wholesale customers expressed frustration with DMWW's cost of service study and rate setting approach, however, there was not an overarching view that they are receiving poor value. In several instances, wholesale customers indicated they are receiving good value at the current rate.
- Members indicated that dealing with DMWW on operational issues is very easy and professional.
- Members indicated that the finished water quality they receive from DMWW is generally very good.
- Members indicated that there is a concern about how future water supply and additional capacity will be developed under the current framework.

1.4.2 SWOT Analysis

The SWOT Analysis was conducted on September 12, 2014 at the Des Moines Botanical Garden. The SWOT Analysis was led by Black & Veatch and consisted of approximately two members from each CIRDWC community/utility. A morning session focused on the strengths, weaknesses, opportunities, and threats of the existing method for providing regional water service. The current method includes the majority of source of supply and treatment provided by DMWW with wholesale purchased capacity agreements or full service agreements with the surrounding communities. The afternoon session focused on the strengths, weaknesses, opportunities, and threats of providing water service to the Greater Des Moines region from new Regional Production Utility. Upon completion of the afternoon session, Black & Veatch reviewed individual group results to derive a consolidated summary that was reviewed by CIRDWC members. The following Tables present the combined results of the SWOT Analysis. Appendix B presents a copy of the presentation materials used during the SWOT analysis.

STRENGTHS	
Current	**Regional Production Utility**
■ DMWW Staff Responsible and Knowledgeable ■ Reliability of finished water ■ Currently finished water quality is good ■ Redundancy ■ Multiple sources of supply ■ Ability of customer communities to make independent decisions ■ Opportunity to choose level of service ■ Knowledge of defined capacity limits for each community	■ More equal representation with regards to governance, planning, and rates ■ More political influence at regulatory level ■ More political stability on governing board ■ Potential long-term cost efficiencies (direct and indirect) ■ Regional planning ■ Provide relative savings – slow the rate of increase

WEAKNESSES	
Current	**Regional Production Utility**
■ Autocratic governance of water supply and production	■ Size of governing body
■ No current Board representation of customer communities	■ Source water quality and quantity are still issues
■ No accountability to customer communities for how resources are spent or decisions made	■ Change in workforce impacting level of service
■ Source water quality	■ Cost versus investment – long term change over short term pain
■ Source water quantity	■ Buy-in costs
■ Competing priorities for responding to regional growth	■ Conflict between growth and reinvestment
■ Availability of purchased capacity to meet growth	■ Right now we know who to blame

OPPORTUNITIES	
Current	**Regional Production Utility**
■ Improve current processes	■ Ability to influence quality and quantity
■ Individual communities continue to make independent decisions	■ Long term bonding capability
■ More inclusive governance and geographic diversity of Board	■ Predictability on revenue and costs
■ Ability to improve watershed management	■ Better control over resources
	■ Consistent message communicated with customers
	■ Input into regional economic development

THREATS	
Current	**Regional Production Utility**
■ Competing interests for same source water	■ Initial cost of buy-in
■ Division/breakup of current customer configuration	■ Less than 100% participation from communities
■ Availability of capacity to meet customer community needs	■ Perception of reduction in work force
■ Nonpoint source pollution impact on source water	■ Loss of local control
■ Climate issues	■ Failure to meet customer expectations
	■ Nonpoint source pollution impact on source water
	■ Climate issues

1.5 VALUATION ESTIMATE

The formation of a Regional Production Utility separate from DMWW would likely include a transaction that transfers assets from DMWW and several other entities to the new Regional Production Utility. Therefore, an estimate of the value of those assets is needed to understand the level of value brought by participants to the new Regional Production Utility. Black & Veatch performed a valuation to estimate the potential fair market value of assets using the Cost Approach method of valuation. This consists of determining the Original Cost Less Depreciation (OCLD) and Replacement Cost Less Depreciation (RCLD) to derive a range of value. The Cost Approach provides a reasonable range of fair market value for purposes of this Study.

1.5.1 Asset Inventory

Black & Veatch relied on information provided by CIRDWC members to understand what potential water service assets would be transferred to the Regional Production Utility. After reviewing information and discussing with CIRDWC members, Black & Veatch generally selected assets that 1) currently serve more than one utility or community; or 2) have the future potential of serving or supporting the service to more than one utility or community in the region. A map showing the Greater Des Moines region and significant water production assets is included in Appendix C. The following provides a brief description of the identified assets:

- Core network assets of DMWW including source of supply, treatment facilities (Fleur, McMullen, and Saylorville water treatment plants (WTP)), as well as the associated core network transmission mains, pump stations, and storage tanks.
- Source of supply and treatment facilities of West Des Moines Water Works (WDMWW), as well as the 98th Street elevated storage tank.
- Wells and treatment plants owned and operated by the City of Altoona.
- Aquifer Storage and Recovery (ASR) wells owned and operated by the City of Ankeny.
- Raw water quarries owned by the Urbandale Water Works.

Along with the asset inventory, Black & Veatch reviewed information related to these assets to understand their capabilities with respect to meeting peak day water demands. Based on a review of information and discussions with staff that operate these assets, the estimated total and firm capacities of these assets is presented in Table 1-1.

Table 1-1 Summary of Total Capacity and Firm Capacity

LINE NO.	PHYSICAL ASSET	TOTAL CAPACITY/ DEMAND, MGD	FIRM CAPACITY/ DEMAND, MGD
	WTP and ASR Supply Facility Capacity		
1	City of Altoona Treatment Plants	3.90	0.58
2	City of Ankeny ASR Wells	4.32	0.00
3	DMWW Treatment Plants and ASR Wells	116.00	86.70
4	WDMWW Treatment Plant	9.90	6.90
5	**Total WTP and ASR Capacity[(a)]**	**134.12**	**118.6**

[(a)] The value of 118.6 mgd is not a summation. Total firm capacity considers all production facilities in operation with one of the seven WTPs (McMullen WTP) limited to firm capacity and one 3.0 mgd ASR well out of service to account for equipment being offline for maintenance and/or repair.

The identified assets are currently not designed to work in coordination, and Black & Veatch and HR Green did not undertake detailed modeling or analysis to assess the overall performance of the systems as a combined Regional Production Utility. Based on a review of available information, a reasonable, high level estimate of the regional peak day demand is approximately 115 mgd. This

reflects that regional demands are already close to firm capacity limits and approaching total capacity limits. Assuming steady growth in the region, it appears reasonable to assume that expansion of regional production assets will be necessary in the coming years.

1.5.2 Estimated Range of Value

Table 1-2 presents the results of the Cost Approach method of valuation. In general, Black & Veatch relied on asset information and other data provided by the entities that would contribute source of supply, treatment, and transmission assets to the Regional Production Utility. In certain instances, Black & Veatch developed Replacement Cost estimates for specific assets using engineering judgment. Black & Veatch used cost trend indices from the *Handy-Whitman Bulletin No. 180: Cost Trends of Water Utility Construction* (Handy-Whitman Index) to derive the Replacement Cost or Original Cost of the assets. The Original Cost and Replacement Cost values are adjusted for accumulated depreciation to recognize that over time, the value of an asset decreases due to factors such as wear and tear, action of the elements, or other factors. Accumulated depreciation was determined on a straight line basis using service life estimates developed by Black & Veatch, as well as the known age of the asset. The estimated valuation ranges from approximately $234 million to $413 million, with a mid range value of $323 million.

Table 1-2 Summary of Estimated Valuation

Line No.	Description	Original Cost	Replacement Cost	Original Cost Accumulated Depreciation	Replacement Cost Accumulated Depreciation	OCLD	RCLD
1	Des Moines Water Works	$288,395,300	$692,556,400	$78,733,700	$327,320,800	$209,661,600	$365,235,600
2	West Des Moines Water Works	$27,060,600	$61,177,000	$9,900,400	$27,349,700	$17,160,200	$33,827,300
3	City of Altoona	$8,145,700	$23,050,800	$3,857,400	$13,600,700	$4,288,300	$9,450,100
4	City of Ankeny	$2,279,800	$3,310,400	$468,600	$729,700	$1,811,200	$2,580,700
5	Urbandale Water Works	$870,900	$1,680,000	$0	$0	$870,900	$1,680,000
6	**Estimated Valuation**	**$326,752,300**	**$781,774,600**	**$92,960,100**	**$369,000,900**	**$233,792,200**	**$412,773,700**
7	**Mid Range Estimate**					**$323,283,100**	

1.5.2.1 Estimated Value of Purchased Capacity and Other Contributions

DMWW maintains Wholesale Water Service Master Agreements with approximately 12 communities in the Greater Des Moines region. These agreements provided a mechanism for wholesale customers to contribute funds to DMWW in exchange for a commitment by DMWW to supply a specific amount of peak day water, or capacity. Based on a review of the agreements and other information, Black & Veatch determined that funds contributed by these customers were primarily used to construct DMWW's McMullen WTP (including raw water assets), Saylorville WTP (including raw water assets), Saylorville WTP Feeder Main, and two ASR wells. The range of value for these assets is approximately $71,791,000 to $95,177,300, with a mid range value of $83,484,200.

Additionally, it was determined that a recent project to enhance water supply to the eastern portion of the regional system was contributed by three communities. The estimated value of this project ranges from approximately $12,422,200 to $13,455,600, with a mid range value of $12,939,000.

There were also contributions identified for assets such as the Polk City feeder main and WDMWW's 98th Street Elevated Storage Tank which were incorporated into the Study.

Within the Financial Analysis portion of this Report, these values are deducted from the applicable entity's overall value, and applied to the individual utilities or communities that made the contribution. The net mid range value applicable to DMWW is approximately $196.5 million.

1.6 FINANCIAL ANALYSIS

A financial analysis was conducted to 1) define an approach for how regional participants could form a Regional Production Utility on an equal basis; and 2) determine the estimated effective rate per 1,000 gallons that would apply to participants for water service from the Regional Production Utility. A significant assumption in the financial analysis is that all current purchased capacity customers and DMWW would participate in the new Regional Production Utility.

1.6.1 Net Value Analysis

The Net Value analysis reflects the value brought to the table by potential participants in the Regional Production Utility. The net value per entity reflects their respective value, offset by outstanding net debt service that is held by DMWW, primarily related to purchased capacity contributions. The following Table presents the net value by entity based on the mid range estimate of value determined in the Valuation Estimate section of this Report.

Table 1-3 Summary of Net Value per MGD by Entity

Line No.	Description	(1) Total Capacity	(2) % Total Capacity	(3) Estimated Mid Range Value	(4) Estimated DMWW Outstanding Debt	(5) Estimated DMWW Debt Service Reserve	(6) Net Value	(7) % Net Value	(8) Net Value per mgd
		mgd					=(3)+(4)+(5)		=(6)/(1)
	Contributing Entities								
1	Des Moines Water Works	59.86	44.63%	$196,459,400	($5,996,800)	$703,400	$191,166,000	65.17%	$3,193,400
2	Polk Co. (SE and Unincorporated)	1.95	1.45%	$3,895,200	($679,800)	$0	$3,215,400	1.10%	$1,648,900
3	Berwick Water Association	0.25	0.19%	$371,800	($56,300)	$45,100	$360,600	0.12%	$1,442,400
4	Urbandale Water Works	15.30	11.41%	$24,028,800	($11,204,700)	$1,609,000	$14,433,100	4.92%	$943,300
5	West Des Moines Water Works	18.87	14.07%	$36,457,400	($4,541,500)	$708,100	$32,624,000	11.12%	$1,728,600
6	Ankeny	12.60	9.39%	$15,339,900	($9,983,100)	$959,500	$6,316,300	2.15%	$501,300
7	Clive	6.98	5.20%	$11,967,400	$0	$0	$11,967,400	4.08%	$1,714,500
8	Waukee	3.69	2.75%	$6,287,100	($805,100)	$171,000	$5,653,000	1.93%	$1,530,300
9	Warren Rural Water	3.25	2.42%	$4,827,300	$0	$0	$4,827,300	1.65%	$1,487,200
10	Xenia Rural Water	2.95	2.20%	$4,385,700	$0	$0	$4,385,700	1.50%	$1,487,200
11	Norwalk	1.97	1.47%	$2,922,200	($412,400)	$146,500	$2,656,300	0.91%	$1,351,800
12	Bondurant	1.20	0.89%	$1,784,600	($684,800)	$77,800	$1,177,600	0.40%	$981,300
13	Altoona	4.90	3.65%	$12,337,600	$0	$0	$12,337,600	4.21%	$2,517,900
14	Polk City	0.35	0.26%	$2,218,700	$0	$0	$2,218,700	0.76%	$6,339,100
15	**Total**	**134.12**	**100.00%**	**$323,283,100**	**($34,364,500)**	**$4,420,400**	**$293,339,000**	**100.00%**	**$2,187,100**

As is seen in Columns 1 and 2 of Table 1-3 above, the entities have varying levels of claims on the total capacity of the regional system. The purchased capacity customers have their amounts that have been contractually agreed to with DMWW. In addition to purchased capacity amounts, WDMWW, Altoona, and Ankeny retain the capacity related to their treatment and ASR facilities that would be transferred to the Regional Production Utility. DMWW retains the total capacity of the DMWW system, less the purchased capacity amounts previously mentioned (approximately 116 mgd – 56.137 mgd = 59.86 mgd).

The net value by entity is reflected in Column 6, along with the associated percentage of total net value in Column 7. The net value per mgd of total capacity is reflected in Column 8 and shows that individual entities are contributing a different net value per mgd to the Regional Production Utility.

Alignment of net value per mgd by entity provides for the formation of the Regional Production Utility with participants on an equal basis. To achieve this alignment, Black & Veatch used a two-step process. First, a cash payment to DMWW was assumed to reduce its overall net value per mgd to a level closer to the other entities. Second, the contribution by entity that would bring all participants into alignment on a net value per mgd basis was determined. Table 1-4 presents the alignment of net value per mgd by entity.

Table 1-4 Summary of Alignment of Net Value per MGD by Entity

Line No.	Description	(1) Net Value	(2) Cash Payment Des Moines Water Works	(3) Net Contributions (To)/From Other Entities	(4) Adjusted Net Value	(5) Restated Total Capacity	(6) Adjusted Net Value per mgd
					(1)+(2)+(3)		(4) / (5)
	Contributing Entities						
1	Des Moines Water Works	$191,166,000	($100,000,000)		$91,166,000	59.86	$1,522,900
2	Polk Co. (SE and Unincorporated)	$3,215,400		($245,800)	$2,969,600	1.95	$1,522,900
3	Berwick Water Association	$360,600		$20,200	$380,800	0.25	$1,522,900
4	Urbandale Water Works	$14,433,100		$8,867,400	$23,300,500	15.30	$1,522,900
5	West Des Moines Water Works	$32,624,000		($3,882,200)	$28,741,800	18.87	$1,522,900
6	Ankeny	$6,316,300		$12,872,400	$19,188,700	12.60	$1,522,900
7	Clive	$11,967,400		($1,337,400)	$10,630,000	6.98	$1,522,900
8	Waukee	$5,653,000		($27,300)	$5,625,700	3.69	$1,522,900
9	Warren Rural Water	$4,827,300		$116,100	$4,943,400	3.25	$1,522,900
10	Xenia Rural Water	$4,385,700		$105,500	$4,491,200	2.95	$1,522,900
11	Norwalk	$2,656,300		$336,200	$2,992,500	1.97	$1,522,900
12	Bondurant	$1,177,600		$649,900	$1,827,500	1.20	$1,522,900
13	Altoona	$12,337,600		($4,875,300)	$7,462,300	4.90	$1,522,900
14	Polk City	$2,218,700		($1,685,700)	$533,000	0.35	$1,522,900
15	**Total**	**$293,339,000**	**($100,000,000)**	**$10,914,000**	**$204,253,000**	**134.12**	**$1,522,900**

As can be seen, the cash payment of $100 million to DMWW in Line 1 results in an adjusted net value per mgd of approximately $1,522,900. Black & Veatch then made the adjustments seen in Column 3 to align each entity with DMWW at a net value of $1,522,900 per mgd of total capacity. Positive values in Column 3 reflect contributions that would have to be made by entities to the new Regional Production Utility, while negative values reflect contributions that would have to be made to the entities. As for regional communities that currently do not have purchased capacity agreements, the net value per mgd amount of $1,522,900, multiplied by needed capacity, could provide the buy in value necessary for achieving membership.

One impact to the Regional Production Utility would be the likely need to issue debt to perform the cash payments to DMWW. This includes the payment to retire debt related to the core network, and the $100 million cash payment noted above. Table 1-5 presents a summary of the total mid range value, and resulting net value for the Regional Production Utility.

Table 1-5 Breakdown of Total Mid Range Value

Line No.	Description	Breakdown of Value
1	Total Value Estimate - Mid Range	$323,283,100
2	Cash Payment to DMWW	($100,000,000)
3	Net Cash Payment to DMWW for Debt	($29,944,100)
4	Contributions From Participants	$22,967,700
5	Contributions To Participants	($12,053,700)
6	**Total Net Value (Equity)**	**$204,253,000**

1.6.2 Development of Five Year Financial Projection

The second part of the financial analysis is to develop an estimated five year financial projection if the Regional Production Utility were to be formed, as well as the resulting effective rate on a per 1,000 gallon basis.

1.6.2.1 Revenue Requirements

For purposes of the financial analysis, Black & Veatch developed a five year projection of revenue requirements that include 1) operation and maintenance (O&M) expense; 2) any debt service on outstanding bond issues; 3) annual provision for renewal and replacement capital of the system; 4) other cash funded capital.

A summary of the revenue requirements can be seen in the following Table 1-6. As can be seen on Line 5, a reasonable projection of the revenue requirements for the Regional Production Utility starts at approximately $44.9 million in 2016, and increases to approximately $49.9 million by 2020.

Table 1-6 Estimate of Projected Revenue Requirements

Line No.	Description	2016	2017	2018	2019	2020
1	Operation & Maintenance Expense	$25,072,700	$25,824,800	$25,487,800	$26,252,400	$27,040,000
2	Debt Service	$8,241,000	$8,241,000	$8,241,000	$8,241,000	$8,241,000
3	Cash Financed Major Capital	$0	$0	$500,000	$0	$3,000,000
4	Capital Renewals & Replacements	$11,616,000	$11,289,000	$11,164,000	$11,616,000	$11,616,000
5	Total Revenue Requirements	$44,929,700	$45,354,800	$45,392,800	$46,109,400	$49,897,000

1.6.2.2 Projected Billed Usage and Effective Rate

To determine the effective rate per 1,000 gallons, it is necessary to estimate the projected billed usage that the Regional Production Utility would use to recover revenue. Black & Veatch utilized historical billed usage provided by DMWW for the majority of entities. Additional billed usage related to WDMWW and Altoona customers that are served by those entities was also included to derive a total estimate of regional billed usage. For projection purposes, Black & Veatch assumed that DMWW billed usage does not grow over the five years. For all other billed usage, it is estimated

that the annual growth will be 1.5 percent. This results in an effective growth rate of 1.0 percent annually. The following Table 1-7 presents the project of billed usage and annual revenue requirements. The effective rate by year is shown on a per 1,000 gallons basis.

Table 1-7 - Estimated Effective Rate

LINE NO.	DESCRIPTION	2016	2017	2018	2019	2020
1	Annual Revenue Requirements	$44,929,700	$45,354,800	$45,392,800	$46,109,400	$49,897,000
2	Projected Billed Usage (1,000 gal.)	17,857,100	18,010,100	18,165,300	18,322,900	18,482,900
3	Estimated Effective Rate ($/1,000 gal.)	$2.52	$2.52	$2.50	$2.52	$2.70

1.6.3 Analysis of Effective Rate

For comparison purposes, Black & Veatch looked at the current rate paid by several purchased capacity customers to DMWW under the current wholesale arrangement. DMWW recently approved a purchased capacity rate of $1.53 per 1,000 gallons. For comparison to the five year projection, Black & Veatch assumes that this will increase to $1.59 per 1,000 gallons. In addition to the purchased capacity rate paid to DMWW, entities must also pay debt service related to their purchased capacity contribution to DMWW. Black & Veatch derived an estimate of this cost per 1,000 gallons by taking the annual principal and interest for each entity and dividing it by their respective billed usage. The estimated effective rate for WDMWW, City of Ankeny, Urbandale Water Works, and the City of Waukee is presented in Line 2 of Table 1-8. The complete Table presents a comparison of the effective rate under a Regional Production Utility to the estimated effective rate under the current wholesale arrangement.

Table 1-8 - Effective Rate Comparison

LINE NO.	DESCRIPTION	CITY OF ANKENY	URBANDALE WATER WORKS	CITY OF WAUKEE	WEST DES MOINES WATER WORKS
1	2016 Effective Rate – Regional Production Utility ($/1,000 gal.)	$2.52	$2.52	$2.52	$2.52
2	Current Effective Rate ($/1,000 gal.)	$2.15	$2.27	$2.37	$2.00
3	% Difference (Regional to Current)	$17.2%	$11%	6.3%	26.0%

As can be seen, the estimated effective rate for the Regional Production Utility would likely be higher compared to the current effective rate for the above communities. While the above comparison provides an indication of the current comparison, Black & Veatch recommends that each entity undertake its own separate analysis as each entity is familiar with the costs it may have incurred to purchase capacity or contribute to DMWW over the years. In general the estimated effective rate is not completely out of line with current rates paid by regional entities.

1.6.4 Future Considerations

While the comparison of the effective rate under a Regional Production Utility compared to the current wholesale arrangement provides valuable information to see how current costs might change, it is also important to consider the value of potential changes to meeting future growth demands.

Under the current wholesale arrangement, a utility that needs additional capacity more than likely must obtain it from DMWW. Black & Veatch understands that DMWW will identify the cost of the necessary improvements to add the capacity, and then pass that cost solely along to the utility that requires the capacity. This approach by DMWW is not uncommon and is done to protect existing customers from being overly burdened with costs for additional capacity that may not benefit them.

One potential option could be for the Regional Production Utility to share in the overall costs for expanding the capacity of the system. The sharing of expansion costs under this option would be consistent with the net value approach outlined in this Report that brings participants into the Regional Production Utility on an equal basis (net value per mgd).

Table 1-9 provides a hypothetical example for consideration. Under the current situation, the four utilities require an additional 5.0 mgd of capacity each. The hypothetical project cost of $60 million would be split between the utilities on an equal basis. The associated bond issue results in annual principal and interest payments of $867,000 per year, and these payments are passed on by DMWW to the utilities. This results in varying cost per 1,000 gallons based on their respective billed usage for recovering the cost.

The alternative option reflects the sharing of system expansion costs of 20.0 mgd among all regional participants. The unit cost under this option is $0.20 per 1,000 gallons. For Utility No. 2, this would result in annual savings of approximately $375,000 (($0.35 - $0.20) X 2,500,000).

Table 1-9 Future Expansion Example

LINE NO.	UTILITY	CAPACITY NEEDED (MGD)	ANNUAL PRINCIPAL AND INTEREST (1)	BILLED USAGE (1,000 GAL.)	COST PER 1,000 GAL.
CURRENT SITUATION					
1	Utility No. 1	5.0	$867,000	1,200,000	$0.72
2	Utility No. 2	5.0	$867,000	2,500,000	$0.35
3	Utility No. 3	5.0	$867,000	1,400,000	$0.62
4	Utility No. 4	5.0	$867,000	500,000	$1.73
POTENTIAL OPTION – REGIONAL PRODUCTION UTILITY					
5	Total Regional Utility	20.0	$3,470,000	17,557,917	$0.20

Note: Hypothetical analysis for illustration purposes only.

(1) Estimated based on hypothetical project cost of $60M, 30-year bond using 4.0% annual interest rate.

Existing utilities and/or communities that are customers of DMWW, and that are not anticipating growth may balk at the option of a regional water utility sharing expansion costs among all regional entities. However, these entities must consider the potential of growth communities pursuing their future water needs either individually, or as a group separate from DMWW. Over time the loss of revenue from any customer that leaves DMWW could result in rate increases to customers that remain, as fixed costs of the DMWW system are spread over a smaller billed usage base.

1.7 GOVERNANCE

The creation of a new Regional Production Utility would be a significant change from the current arrangement that has seen DMWW as the key player in the development of the current regional water system. Governance of the provision of water to the surrounding communities via the core network is primarily administered by the DMWW Board of Directors. This Board is currently responsible for the establishment of rates and charges, system planning, capital financing, and other miscellaneous responsibilities that must be handled on a day to day basis.

1.7.1 Potential Initiating Principles

As CIRDWC members consider whether to establish a Regional Production Utility, there are several items or principles derived from the stakeholder input and SWOT analysis that were important to members. These items were noted by Black & Veatch as being important to one or several members, and could provide the basis for a founding document creating the Regional Production Utility. They are provided here for consideration:

- Future Source of Supply – Members would need to agree not to independently develop their own source of supply, unless approved by the Regional Production Utility.
- Future Purchase of Finished Water – Members would need to agree to purchase all future, finished water from the Regional Production Utility.
- Water Quality – Members would need to agree to support all approved initiatives by the Regional Production Utility related to source and finished water quality.
- System Planning and Expansion – Members would need to agree to participate in regional water system planning to benefit the entire region.
- Outstanding Debt – Members would need to agree that all debt related to their individual systems or previous relationship with DMWW remain separate from the Regional Production Utility.
- Rates and Charges - Members would need to agree to establish sufficient rates and charges that support and maintain the existing core network, as well as expand the core network to meet future regional demand.

1.7.2 Key Governance Issues

This Study addresses several key aspect of governance that will need to be addressed by the regional entities.

- Board Makeup – During the stakeholder input and SWOT analysis, a re-occurring theme from CIRDWC members was their desire to have a seat at the table with respect to governance issues, including establishment of rates and charges and system planning. This will require a large Board

that will need to accommodate varying viewpoints on governance and regional water issues. CIRDWC members did state that the large WRA Board functions effectively.

In Black & Veatch's experience, an effective Board makeup would include members who are appointed by the governing bodies of their respective communities. The appointment of Board members is preferable to a Board that is made up of elected members.

A professional staff would likely be necessary to assist the Board in the day to day operation of the Regional Production Utility. Staff would include a General Manager or Executive, Financial Officer, Chief Engineer, Human Resource Manager, and Legal Manager.

Based on feedback from CIRDWC members and Black & Veatch's experience, important committees would likely include:

- Executive Committee
- Planning/Technical Committee
- Finance Committee

- Voting Rights – During the stakeholder input phase of the Study, a majority of members agreed that it would be reasonable to assign a greater weight in terms of voting and governance to larger (in terms of population, usage, or other water-related factors) communities. With the Net Value analysis aligning members on an equal basis in terms of net value per mgd, it could be possible to apportion votes in several ways as agreed to at the founding of the Regional Production Utility. Examples include using the total net value contributed by members or population.
- Growth of Regional System – Growing the regional water system in an efficient manner to the benefit of all members will be an important consideration for members. This includes issues such as rates and charges, financing of expansion improvements, and service issues. In terms of financing growth, members will need to decide on whether to adopt an "all in" approach where all members help with expanding the core system to the benefit of the region, or whether to finance expansion projects that are recovered only from entities that require the expansion.

1.7.3 Governance Alternatives

During the stakeholder input phase of the Study, many of the CIRDWC members stated that the current governance structure of the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) was effective. Most of the CIRDWC members participate as members of the WRA Board that oversees the operation of the regional wastewater system. Black & Veatch evaluated several governance alternatives that could be considered by CIRDWC members. These alternatives are discussed below:

- Traditional Authority – This alternative is most common in Black & Veatch's experience and is also similar to the familiar WRA model. In this alternative, the Board has responsibility for the core functions of the utility, including financial, operational, planning, and regulatory functions. Members are typically appointed by governing bodies of the communities that are served by the utility. A professional staff manages the day to day operation of the utility.
- Modification of Current Governance Arrangement – One alternative to moving fully to a Regional Production Utility could be a modification of the current regional water service arrangement. Currently, management of regional water production and transmission, finance and rates, and

other important functions are overseen by the DMWW Board of Directors. Modifications to this arrangement could be made to allow regional entities more input into the overall governance of the regional water system.

- Public Private Partnership – This alternative governance option could take the form of a lease arrangement between DMWW and a private or investor-owned utility. The advantages of this alternative governance option could include 1) retain ownership of assets; 2) lease payments to DMWW and purchased capacity customers; 3) potential operational cost savings; and 4) mitigation of political difference between regional entities. The potential drawbacks to this governance alternative are 1) loss of control in regional water supply decisions; 2) potential higher rates due to required higher return on investment; and 3) minimal input into regional planning.

1.8 CONCLUSION

Black & Veatch was retained by CIRDWC to study several important aspects with respect to potentially forming a Regional Water Production Utility for the Greater Des Moines region. Initial tasks focused on receiving input from CIRDWC members and included stakeholder input and a SWOT analysis. An estimated valuation and five year projection of potential revenue requirements was derived to develop an effective water rate per 1,000 gallons for members to compare with their current rate. Governance parameters were analyzed to understand issues that members will have to agree to before forming the Regional Production Utility.

From Black & Veatch's perspective, this first step at evaluating the potential for forming a Regional Production Utility has provided valuable information for CIRDWC members. This information includes:

- Consolidated CIRDWC member input into the positive and negative aspects of forming a Regional Production Utility versus the current regional arrangement.
- An estimated valuation of regional production assets.
- A Net Value analysis that establishes members coming into the Regional Production Utility on an equal basis.
- An estimated effective water treatment and transmission rate for CIRDWC members to compare to their existing rates, as well as future financial considerations for both growth and non-growth entities.
- Consideration of governance criteria such as board responsibilities, potential committees, and potential weighted voting options. Additionally considered governance alternatives to the current regional method for supplying water to the region.

From Black & Veatch's perspective, none of the information derived during this Study appears to be a "deal breaker." However, we realize that CIRDWC members will need to digest the information and consider the best path forward for their communities. If CIRDWC members determine that the results of this Study are favorable for moving forward, Black & Veatch would recommend the following:

- Additional evaluation and discussion of issues raised in this Study by sub-committees of the CIRDWC Board. This could include sub-committees focused on Study elements such as financial, technical, and governance issues should CIRDWC members decide to continue moving forward.
- Future steps could include additional financial and legal due diligence to provide a more detailed feasibility assessment; drafting of memorandum of understanding that outlines key principles of a Regional Production Utility; and public input.

2 Introduction

2.1 PARTICIPANTS

Des Moines Water Works (DMWW) provides water to approximately twenty-two suburban communities and water districts in the Greater Des Moines region. Table 1-1 is a list of these communities and the current type of service and/or agreement each community has with DMWW. Each of the communities shown in Table 2-1 has the opportunity to participate in the new Regional Production Utility. The last column in the table indicates communities that have expressed potential interest in joining a Regional Production Utility via participation in this Study for CIRDWC.

Table 2-1 Full Service and Wholesale Customers of DMWW

COMMUNITY	TOTAL SERVICE AGREEMENT	WHOLESALE	PURCHASED CAPACITY	REGIONAL UTILITY PARTICIPANT[a]
Alleman	■			
Altoona		■	■	■
Ankeny		■	■	■
Berwick	■		■	
Bondurant		■	■	■
Clive		■	■	■
Cumming	■			■
Greenfield Plaza	■			
Johnston		■		■
Norwalk		■	■	■
Pleasant Hill	■			■
Polk City		■	■	■
Polk County Benefited Water District	■			■
Polk County RWD 1 (b)	■			■
Runnells	■			
Unincorporated Warren County	■			
Urbandale		■	■	■
Warren Rural Water		■	■	■
Waukee		■	■	■
West Des Moines		■	■	■
Windsor Heights	■			■
Xenia (b)		■	■	■

[a] Des Moines Water Works is a CIRDWC member and participant in this Study.

[(b)] Polk County RWD has reached an agreement to sell its purchased capacity to Xenia. As of the date of this report, the transaction has not been approved by the DMWW Board of Trustees.

For communities that have a total service agreement, DMWW provides services such as distribution system operation, maintenance and replacement of mains and customer service. It is assumed that DMWW would continue to provide these services to these communities if a Regional Production Utility was formed. Wholesale customers are supplied water through one or more master meters. Wholesale customers had the option in the past to purchase capacity in DMWW's system. This upfront investment in infrastructure essentially "buys down" the community's rate for wholesale water by eliminating the return on invested capital component of the DMWW wholesale rate. Table 2-1 indicates which wholesale customers currently have purchased capacity from DMWW. If a Regional Production Utility is formed, this Study assumes that these purchased capacity contracts will be eliminated and water will be provided by the new Regional Production Utility. For communities that did not participate in this Study sponsored by CIRDWC, this Study assumes they will continue to receive their water from DMWW via the new Regional Production Utility.

2.2 SCOPE OF WORK

The Study was conducted per the Scope of Work outlined in the Consulting Services Agreement between Black & Veatch and CIRDWC dated June 27, 2014. The general elements of the Scope of Works are as follows:

- Collect and review data related to financial, operational, and asset information to gain an understanding of the current methodology used to provide drinking water service to the Greater Des Moines region.
- Conduct stakeholder input sessions with CIRDWC members to gain an understanding of their current operations, as well as to receive their input with respect to the Study and the formation of a potential regional water production entity.
- Conduct SWOT analysis with CIRDWC members to understand the benefits and drawbacks of forming a Regional Production Utility versus the current wholesale service arrangement.
- Perform estimate of fair market value of assets that would comprise the Regional Production Utility using the Cost Approach methodology of valuation.
- Perform a financial analysis to determine the potential impact on wholesale customer rates under a Regional Production Utility.
- Evaluate three potential governance alternatives, including issues of potential board composition, voting rights, and responsibilities.
- Attend CIRDWC meetings to brief CIRDWC members on progress of the Study.

3 Stakeholder Input and SWOT Analysis

3.1 STAKEHOLDER INPUT

In July of 2014, Black & Veatch met with CIRDWC members to better understand issues surrounding the potential development of a Regional Production Utility, and to allow members the opportunity to provide input into the development of the Study. The input from CIRDWC members was also valuable for preparing and conducting the Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis that will be discussed subsequently. The following provides a list of the communities and/or organizations that Black & Veatch met with to receive stakeholder input:

- West Des Moines Water Works and City of West Des Moines
- Des Moines Water Works and City of Des Moines
- Polk County
- City of Johnston
- City of Waukee
- City of Pleasant Hill
- Xenia Rural Water
- Urbandale Water Works and City of Urbandale
- City of Norwalk
- Warren County Rural Water
- City of Bondurant
- City of Altoona
- City of Ankeny
- City of Polk City
- City of Windsor Heights
- City of Clive

3.1.1 Input

Prior to meeting with CIRDWC members to receive their input, Black & Veatch prepared a questionnaire to allow members to consider certain issues, as well as to provide basic information on their respective communities and/or utilities. The questionnaire is provided for reference in Appendix A. Key elements of the questionnaire included understanding the characteristics of each community or utility. These characteristics included items such as 1) current and general configuration of individual entity's water system; 2) number of types of water utility customers; 3) annual and peak water usage; 4) number of employees; and 5) annual budget. This information was important as it allowed Black & Veatch to understand the scope and size of members that require water service in the Greater Des Moines region.

The next component of the questionnaire was related to understanding each entity's strategy, particularly related to providing water service. Items in this section of the questionnaire focused on understanding whether the community in question had a strategic plan; estimated growth to understand potential future water needs; plans for meeting future water needs; and general input related to the current quantity and quality of the water supplied to customers.

The Regionalization section of the questionnaire primarily focused on receiving input about the benefits and drawbacks of a potential Regional Production Utility. Thus, members were asked to

provide their opinion as to what would be three benefits to forming a Regional Production Utility; and conversely, what would be three fears or drawbacks to forming a Regional Production Utility. Additionally, members were asked to provide their "best case" scenario for providing water service to the region.

The next section of the questionnaire focused on governance of the potential Regional Production Utility. Members were asked to provide input on several governance parameters including 1) general structure of governing Board; 2) level of day to day input of the entity in the potential governing Board; 3) number of members, professional background, and geographical representation; 4) key focus areas and responsibilities of potential Board; and 5) frequency of potential Board's meetings.

The questionnaire also included a section on water supply to understand each member's concerns and input relative to the current method of supplying water. Questions in this section focused on the stability of the current water supply; the member's ability to contribute to the regional water supply; the pros and cons of the current water supply situation; the potential benefits with respect to supply from forming a Regional Production Utility.

There was also a section on Financial and Rate issues for each member to provide input. The purpose of this section was to understand the current rates that members pay to DMWW for water service, as well as understanding the rates that each member charges its own customers for overall water service. Additionally, members were asked their opinion of the value of water service provided by DMWW, as well as their opinion on transferring their water production assets, if any, to a new production entity.

A section related to Public/Stakeholder input was included in the questionnaire to receive feedback related to what each member would have to do in terms of public outreach should a Regional Production Utility be pursued. This included understanding the process for educating citizens, and what steps would be required for a member to receive the necessary permission to join a new Regional Production Utility. A question was also asked to gauge whether members are already participating in other regional initiatives.

Finally, members were provided a period of the interview to provide their own input if not already covered as part of the questions. This allowed members to either re-emphasize important elements of the Study, or add new items to discuss with Black & Veatch relative to the Study.

3.1.2 General Takeaways

Based on the feedback received from members as part of the stakeholder input, the following are general takeaways derived by Black & Veatch from the interviews. It should be noted that the takeaways below do not necessarily reflect a unanimous opinion of all members, but are general takeaways that are derived from feedback from several members during our interviews.

- The majority of members that currently receive their water service from DMWW are expecting steady growth in population over the coming years.
- There are multiple planning initiatives for growth and economic development being conducted throughout the Des Moines metro area. While communication between DMWW and regional

communities does occur with respect to water issues, there is no coordinated, regional planning with respect to developing future water supply to meet projected demands.

- Current wholesale customers are very interested in having more of a say in the future development and provision of water service in the greater Des Moines region.
- Generally, members indicated that governance with proportionate representation would be acceptable in any new regional water production entity. There were a small number of participants that advocated for a one member, one vote approach to governance.
- Current wholesale customers expressed frustration with DMWW's cost of service study and rate setting approach; however, there was not an overarching view that they are receiving poor value. In several instances, wholesale customers indicated they are receiving good value at the current rate.
- Members indicated that dealing with DMWW on operational issues is very easy and professional.
- Members indicated that the finished water quality they receive from DMWW is generally very good.
- Members indicated that there is a concern about how future water supply and additional capacity will be developed under the current framework.

The input from CIRDWC members also provided issues to be further assessed during a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to be conducted as part of the Study. Based on the stakeholder input, several important questions were identified by Black & Veatch:

- Would a governance model that is similar to that used to provide wastewater service to the greater Des Moines area be appropriate or applicable for a potential regional water production entity?
- Would the level of representation change over time depending on changes to water usage, number of customers, etc.?
- How can the current cost of service and rate process be improved?
- What is the best structure for addressing future water quality and quantity issues for the greater Des Moines region?

3.2 SWOT ANALYSIS

As part of the Study, SWOT analysis was performed with the CIRDWC members. The SWOT analysis was conducted on September 12, 2014 at the Des Moines Botanical Garden. CIRDWC members were notified of the SWOT workshop in advance and there was attendance from a majority of CIRDWC members participating in the Study. A summary of the presentation materials is included in Appendix B.

A SWOT analysis is a structured planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or in a business venture, in this instance a potential business venture related to a regional water production entity. A SWOT exercise provides the structure to allow all participants to voice their thoughts, opinions and concerns related to potential business venture. It also involves identifying the internal and external factors that are favorable and unfavorable to achieve the objective of the business venture.

Figure 1 provides a visual depiction for assessing a potential business venture. The following are general definitions related to the SWOT components:

- *Strengths* are internal characteristics or issues that give the project or business venture advantage over others
- *Weaknesses* are internal characteristics or issues that place the project or business venture at a disadvantage
- *Opportunities* are external characteristics or issues that give the project or business venture advantage over others
- *Threats* are external characteristics or issues that place the project or business venture at a disadvantage

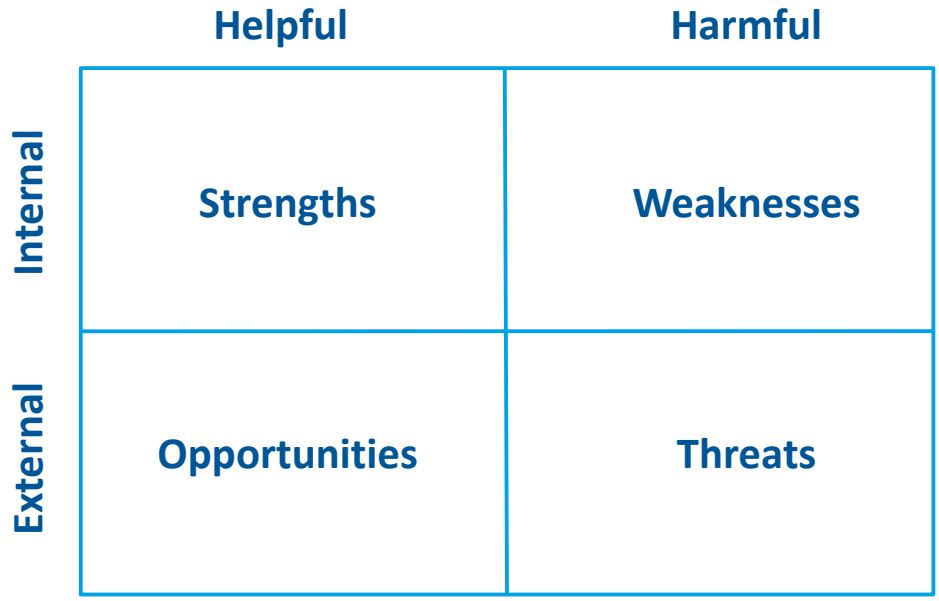

Figure 1 SWOT Analysis Matrix

CIRDWC members were divided into four separate groups of approximately eight to nine members. In general, Black & Veatch requested no more than two participants from each CIRDWC member to provide for a balanced and candid discussion. The four separate groups were also generally mixed to provide balanced groups that reflect the various entities that comprise the current arrangement for providing regional water, i.e., DMWW, wholesale customers, and total service customers. Black & Veatch and HR Green served as facilitators for the four groups, and an overall facilitator from Black & Veatch moved from group to group to resolve any questions and keep the groups on schedule.

The morning portion of the daylong session focused on generating the strengths, weaknesses, opportunities, and threats of providing water under the current situation. The groups focused on generating five ideas and/or concepts for each SWOT matrix option. The afternoon session focused on generating the strengths, weaknesses, opportunities, and threats of providing water under a potential Regional Production Utility. As with the morning session, the groups were asked to

generate approximately five idea and/or concepts for each SWOT matrix option under this scenario.

Based on the ideas and concepts generated for each SWOT matrix option, and for each scenario, Black & Veatch compiled the results and assessed common themes that arose from the small group sessions, comparing the themes between both scenarios (current scenario where water is provided by DMWW to wholesale and retail customers vs. water provided by a new Regional Production Utility). These common themes were presented to the entire group at the end of the day for review, clarification, and discussion. A summary of the themes by scenario is presented below:

STRENGTHS

Current

- Staff Responsible and Knowledgeable
- Reliability of finished water
- Currently finished water quality is good
- Redundancy
- Multiple sources of supply
- Ability of customer communities to make independent decisions
- Opportunity to choose level of service
- Knowledge of defined capacity limits for each community

Regional Production Utility

- More equal representation with regards to governance, planning, and rates
- More political influence at regulatory level
- More political stability on governing board
- Potential long-term cost efficiencies (direct and indirect)
- Regional planning
- Provide relative savings – slow the rate of increase

The current strengths reflect that DMWW staff are knowledgeable and provide reliable and quality service. The current situation also allows for wholesale customers to make independent decisions under the defined capacity limits that they have established with DMWW. The strengths related to a potential Regional Production Utility reflect greater representation from a regional perspective for governance, planning, and rate issues. Additional strengths include greater political stability with respect to governance, and greater political influence with respect to regulatory and political issues that may impact regional water issues.

WEAKNESSES

Current

- Autocratic governance of water supply and production
- No current Board representation of customer communities
- No accountability to customer communities for how resources are spent or decisions made
- Source water quality
- Source water quantity
- Competing priorities for responding to regional growth
- Availability of purchased capacity to meet growth

Regional Production Utility

- Size of governing body
- Source water quality and quantity are still issues
- Change in workforce impacting level of service
- Cost versus investment – long term change over short term pain
- Buy-in costs
- Conflict between growth and reinvestment
- Right now we know who to blame

For the current situation, weaknesses were identified as lack of regional representation with respect to governance and planning issues. Additional weaknesses include pollutants impacting the source water, less than robust source water quantity during peak demand periods, and uncertainty with respect to meeting future demands with an inability to purchase more capacity from DMWW. The weaknesses related to a Regional Production Utility could include a more diverse governing body that may present challenges with building consensus. Additionally, there may be upfront costs related to the transaction that could make service via a Regional Production Utility cost prohibitive.

OPPORTUNITIES	
Current	**Regional Production Utility**
■ Improve current processes	■ Ability to influence quality and quantity
■ Individual communities continue to make independent decisions	■ Long term bonding capability
■ More inclusive governance and geographic diversity of Board	■ Predictability on revenue and costs
■ Ability to improve watershed management	■ Better control over resources
	■ Consistent message communicated with customers
	■ Input into regional economic development

Under the current situation, members indicated that there are opportunities for improving current processes, e.g., rate methodology. However, the opportunities would be pursued via multiple governing Boards acting independently. For the potential Regional Production Utility, members viewed opportunities as being a more coordinated approach to controlling water production costs and associated rates. They also viewed a more coordinated approach to address or influence water quantity and quality issues facing the region.

THREATS	
Current	**Regional Production Utility**
■ Competing interests for same source water	■ Initial cost of buy-in
■ Division/breakup of current customer configuration	■ Less than 100% participation from communities
■ Availability of capacity to meet customer community needs	■ Perception of reduction in work force
■ Nonpoint source pollution impact on source water	■ Loss of local control
■ Climate issues	■ Failure to meet customer expectations
	■ Nonpoint source pollution impact on source water
	■ Climate issues

The main threats facing the greater Des Moines region under the current situation consists of even greater competition for access to the region's source water. This is in addition to nonpoint source pollution and climate issues that the region is facing that limit the availability and quality of source water. From a Regional Production Utility perspective, the nonpoint source pollution and climate issues remain, however, other threats consist of the breakup of the current customer configuration which could impact the revenues and expenses of various members in a negative manner.

3.2.1 Input Into Feasibility Study

The SWOT analysis provided members the ability to voice their concerns and opinions as to moving from the current method of providing water production service to one where water service is potentially governed and performed via a Regional Production Utility. For purposes of this study, Black & Veatch was also asked to perform a financial analysis to derive an estimate of the uniform

rate that would be applicable to all CIRDWC members should a potential Regional Production Utility be formed. Black & Veatch was also asked to evaluate three separate governance alternatives that could be used by the potential Regional Production Utility. In performing these tasks, Black & Veatch used the SWOT analysis as a basis for understanding whether our analysis 1) sustained strengths or mitigated current weaknesses identified by the members, and 2) enhanced or did not prevent the members from taking advantage of regional opportunities or mitigating external threats.

Additionally, the summary of the SWOT analysis is presented in this report as a reference point for the members as they continue their discussions around a Regional Production Utility. While this Study provides an important first step in determining the merits of a Regional Production Utility, additional work and discussion between the members will have to be performed should the members decide to continue down the path toward a Regional Production Utility. The issues raised during this SWOT analysis provide a basis for future discussions and/or documents.

4 Valuation Estimate

When assessing the feasibility of creating a Regional Production Utility, consideration must be given to the estimated value of water production and transmission assets that would comprise the new entity. As there are multiple utilities that would potentially contribute assets to the new entity, the scope of work for this engagement was crafted to provide CIRDWC with an estimated value based on the Cost Approach methodology of utility valuation. The Cost Approach provides an indication of asset value based on 1) the original cost of investment made by current owners to construct the current system, and 2) the replacement cost that a potential buyer would have to invest to construct an essentially similar water production system. In both instances, Black & Veatch factors in estimated depreciation to recognize that over time, assets decrease in value based on factors such as wear and tear, action of the elements, and obsolescence. In Black & Veatch's experience, a reasonable estimate of fair market value between a willing buyer and seller would fall somewhere between the range of original cost less depreciation (OCLD) and replacement cost less depreciation (RCLD). Other valuation approaches such as the Income Approach and Market Approach were not factored into the valuation estimate due to cost constraints of the study. In Black & Veatch's experience, the Income Approach and Market Approach would generally help to better refine the overall value within the OCLD and RCLD range. An appraisal of land is also not included in the valuation estimate.

The following sections outline the approach to derive the valuation estimate. The general approach was to 1) define the potential assets to be transferred from current utilities to the new Regional Production Utility; 2) determine OCLD; and 3) determine RCLD. This approach provides CIRDWC with an estimated range of value for regional water production assets, also provides valuable input for conducting the financial analysis described later in this Report.

4.1 DEVELOPMENT OF ASSET INVENTORY

Black & Veatch worked with CIRDWC members to identify water system assets that would transfer to a regional water production utility. Assets would include all sources of supply, water treatment plants (WTP), transmission mains, pumping facilities, and storage tanks for supplying finished water to the individual entities.

One of the goals of regionalization is to have a consolidated approach for developing raw water sources and providing treated water. Production facilities for all members would be included in the regional entity and were therefore included as potential assets. Production facilities were determined to include treatment facilities and aquifer storage and recovery (ASR) wells. ASR wells were included due to the basis that they function to provide finished water into the system and offset demand from other treatment facilities during peak demand periods.

Generally, transmission mains and storage assets were deemed to be eligible for inclusion into the regional utility if that asset served (or had the ability to serve) more than one entity. DMWW has previously identified a Core Network of transmission mains, storage tanks, and pumping facilities which it uses to supply finished water throughout the Greater Des Moines region. These Core Network facilities were identified as assets that would be transferred to the Regional Production Utility. However, individual community distribution systems that provide more direct service to customers, including pump stations, distribution mains, and storage tanks, were not included as potential assets.

4.1.1 Asset Inventory

Assets generally included in the valuation are shown on the map in Appendix C and summarized in Tables 4-1 through 4-3 below. These physical assets were determined based on preliminary discussions with CIRDWC members. Individual raw water sources are not identified in the Tables, but these sources would be included as potential assets and are included as part of each respective treatment facility. The following sections provide a brief overview of the assets.

4.1.1.1 City of Altoona

The City of Altoona (Altoona) has purchased capacity from DMWW but does not currently utilize the interconnection. Instead, Altoona meets all its demands using three WTPs, each with similar source and treatment components. Four deep Jordan aquifer wells supply the water to the WTPs. Treatment consists of aeration, pressure filtration, ion exchange softening, and chlorination. WTP No. 1 is fed from Well No. 1 and Well No. 2; WTP No. 2 and WTP No. 3 are each supplied from a single well. The ion exchange process removes calcium and magnesium ions to provide softening but does not remove total dissolved solids (TDS) and sulfates. TDS and sulfates do not have any primary drinking water limits, but do have secondary limits associated with taste and odors (aesthetics).

Altoona's WTPs are not currently located adjacent to any Core Network piping. However, based on the 2013 *Water System Master Plan* conducted by Black & Veatch, the WTPs are near capacity and are therefore not likely to have a significant amount of additional capacity to supply water outside Altoona's distribution system. However, it is recognized that during peak demand periods for the region, these WTPs supply a significant amount of water that otherwise would likely have to be supplied by DMWW.

The total treatment production capacities of Altoona's three WTPs are shown in Table 4-1 below.

4.1.1.2 City of Ankeny

The City of Ankeny (Ankeny) has purchases capacity from DMWW and uses this to meet the majority of its demands. Ankeny also has two deep Jordan aquifer wells that are used as ASR wells to meet seasonal peak demands. The two ASR wells are included as a potential asset to the regional utility. Neither well is located adjacent to the Core Network piping and the supply from these wells would most likely be used exclusively in the Ankeny distribution system. However, it is recognized that during peak demand periods for the region, these ASRs supply a significant amount of water that otherwise would likely have to be supplied by DMWW.

The total production capacity of the ASR wells is shown in Table 4-1 below.

4.1.1.3 Des Moines Water Works

4.1.1.3.1 Source of Supply and Treatment Assets

Des Moines Water Works (DMWW) owns and operates three WTP facilities and two ASR wells to supply water throughout the Greater Des Moines region.

The three WTP facilities consist of the Fleur WTP, L.D. McMullen WTP (McMullen WTP), and the Saylorville WTP. Source of supply for all three facilities consists of direct surface water and groundwater under the direct influence of surface water. The Fleur and McMullen WTPs utilize

lime/soda ash softening with conventional filtration and disinfection for treatment. The Saylorville WTP utilizes ultra-filtration (UF) membrane filters and reverse osmosis (RO) membrane softening.

The Fleur WTP utilizes two river intakes along the Raccoon River and Des Moines River, with each intake capable of supplying up to 100 mgd in raw water to the WTP. The Fleur WTP also utilizes a riverbank style infiltration gallery along the Raccoon River which pulls water from the river and provides river bank filtration to limit turbidity and other suspended solids, while simultaneously providing some denitrification. The capacity of the infiltration gallery varies from approximately 10 mgd to 20 mgd depending on the river level. Raw water from the two river sources typically passes through presedimentation for turbidity and total organic carbon (TOC) removal. DMWW can also bypass presedimentation and send flow directly to the softening basins. The total capacity of the Fleur WTP is approximately 75 mgd, which is limited by the filtration capacity. Firm capacity is approximately 70 mgd, which is limited by filtration and softening capacity.

The McMullen WTP currently uses radial and horizontal alluvial wells and two surface water sources (Crystal Lake and Maffitt Reservoir). All raw water is treated through solids-contact softening basins and filtration. Total treatment capacity of the McMullen WTP is 25 mgd and firm capacity is 12.5 mgd with one of the two softening basins out of service.

The Saylorville WTP uses two radial collector wells to supply raw water to the WTP. The smaller of the two wells is rated for approximately 5 mgd. Total treatment capacity of the Saylorville WTP is 10 mgd. The treatment efficiency of the UF and RO membranes is approximately 83 percent, which results in a firm capacity of approximately 4.2 mgd, which is limited by the source water capacity.

DMWW purchased approximately 3.235 billion gallons of storage capacity in the Saylorville Reservoir from the Army Corps of Engineers in the early 1980's. This storage volume serves as a backup water supply during periods of drought and can be released from the reservoir and collected by the Des Moines River intake downstream of the Saylorville Reservoir.

The total production capacity of DMWW's treatment facilities are shown in Table 4-1 below. These capacities are based on source water and treatment components. DMWW is in the process of making improvements to increase source water capacity at the McMullen site, which is anticipated to increase production to the total design capacity of 25 mgd during low river levels. In addition, the UF membranes at the Saylorville WTP facility are near the end of their useful life and DMWW is in the process of replacing these membranes. Once replaced, the new UF membranes are anticipated to restore the operating capacity of the Saylorville WTP back to its design capacity.

DMWW operates two ASR wells during the high summer seasonal demand period. The ASR wells are located at the McMullen WTP site and the L.P. Moon storage and pump station site.

4.1.1.3.2 Transmission Mains, Pumping, and Storage Assets

DMWW also operates the Core Network to transport and deliver water across the metro area. These include two ground storage reservoirs, three standpipes, two elevated storage tanks, five pump station facilities, and approximately 134 miles of transmission mains ranging in size from 12-inch to 60-inch in diameter. These facilities are shown in Tables 4-2 and 4-3 below. The storage and pumping facilities were included as potential assets based on their operational functionality of serving multiple entities.

The DMWW Core Network transmission and pumping assets considered for the regional utility currently operate with five pressure zones as described below. These pressure zones only include those that would serve the regional utility; additional pressure zones exist to serve individual entities. The numbering convention used below is only for the context of this study.

1. Pressure Zone 1: Supply by Fleur and McMullen WTPs and served by Allen Hazen Tower and Pump Station, Nollen, Tenny, and Wilchinski Standpipes. The system normally floats off the water level in the Tenny and Wilchinski Standpipes. The system hydraulic grade line (HGL) normally operates above the level of the Allen Hazen Tower and Nollen Standpipe.

2. Pressure Zone 2: Supply by Saylorville WTP and Polk County Pump Station. The Polk County Ground Storage facility is filled by Pressure Zone 1 and re-pumped to serve Ankeny (through Pressure Zone 2) and rural Polk County (separate pressure zone).

3. Pressure Zone 3: Supply by Nollen Standpipe through Pressure Zone 1. Nollen Pump Station re-pumps to serve portions of the DMWW and Bondurant systems.

4. Pressure Zone 4: Supply through Pressure Zone 1 and re-pumped through Eastside Pump Station into Shared Eastside Tower. Serves Pleasant Hill, Altoona, and Polk County RWD systems.

5. Pressure Zone 5: Supply through Pressure Zone 1 and LP Moon ASR. LP Moon Ground Storage and Pump Station utilizes two sets of pumps to serve i) WDMWW's 98th Street Tower that serves the WDMWW, Clive, and Waukee systems, and ii) Urbandale and Xenia systems.

From discussions with DMWW, discharge pressures from the Fleur WTP regularly exceed 100 pounds per square inch (psi) and can approach 120 psi based on the demand location and points of entry into the Core Network piping. DMWW recently installed a control valve on the influent to the Wilchinski Standpipe in order to throttle flow into the storage tank and divert water from the Fleur WTP to the north and western portions of the Core Network system.

4.1.1.4 Urbandale Water Works

The City of Urbandale has purchased abandoned quarry pits located along the Des Moines River that could be developed into a raw water source. The estimated current capacity of the quarry pits is approximately 725 million gallons. Urbandale also obtained a withdrawal rate permit from the Iowa Department of Natural Resources to allow withdrawal up to 30 mgd directly from the Des Moines River. At the time of this report, the maximum feasible withdrawal limit from the quarry pit/Des Moines River source is not known, but is assumed that the withdrawal permit can be used to recharge the quarry as needed.

4.1.1.5 West Des Moines Water Works

West Des Moines Water Works (WDMWW) owns and operates one WTP facility, the A.C. Ward WTP. Groundwater wells for the WTP consist of three deep Jordan aquifer wells and 18 total shallow alluvial wells. The well field total capacity is approximately 9.9 mgd and is limited to a firm capacity of approximately 6.9 mgd with two of the three Jordan wells in operation. The lime softening process cannot remove TDS and sulfates that are naturally occurring in the Jordan aquifer, which can result in taste and odor issues with the finished water.

The WTP consists of aeration, lime/soda ash softening, filtration, and disinfection. The total treatment capacity of the A.C. Ward WTP is 12 mgd and the firm treatment capacity is 9 mgd with one of the solids-contact softening basins out of service. The WTP is currently limited by raw water source capacity. The production capacity of WDMWW's treatment facilities are shown in Table 4-1 below. WDMWW's system-wide demand in WDMWW's service area can exceed the capacity of the A.C. Ward WTP, with the remaining water supplied by DMWW.

The A.C. Ward WTP is not located along any Core Network piping. It is assumed for the purposes of this study that all water produced by the A.C. Ward WTP will remain in WDMWW's distribution system and not supplied back into the Core Network.

WDMWW owns an elevated storage tank along 98th Street that currently serves the WDMWW, Clive, and Waukee systems; all three entities provided initial capital and ongoing maintenance costs for the storage tank. The 98th Street EST is fed by the LP Moon pump station and is operated by DMWW.

Table 4-1 Total Source and Supply Assets for Regional Utility

PHYSICAL ASSET	TOTAL CAPACITY/ DEMAND, MGD	FIRM CAPACITY/ DEMAND, MGD
WTP and ASR Supply Facility Capacity		
Altoona - WTP No. 1	1.30	0.58
Altoona - WTP No. 2	1.30	0.00
Altoona - WTP No. 3	1.30	0.00
Ankeny - ASR No. 1	1.44	0.00
Ankeny - ASR No. 2	2.88	0.00
DMWW - Fleur WTP	75.00	70.00
DMWW - LP Moon ASR	3.00	0.00
DMWW – L.D. McMullen WTP	25.00	12.50
DMWW - McMullen ASR	3.00	0.00
DMWW - Saylorville WTP	10.00	4.20
WDMWW – A.C. Ward WTP	9.90	6.90
Total WTP and ASR Capacity[(a)]	**134.12**	**118.60**
2012 Maximum Day Finished Water Demands[(b)]		
Altoona		3.90
Ankeny		4.30
DMWW		96.60
WDMWW		9.90
Total 2012 Maximum Day Finished Water Demand		**114.70**
2012 Remaining Capacity	**19.42**	**3.90**

[a] The value of 118.6 mgd is not a summation. Total estimated firm capacity considers all production facilities in operation with one of the seven WTPs (McMullen WTP) limited to firm capacity and one 3.0 mgd ASR well out of service to account for equipment being offline for maintenance and/or repair.
[b] DMWW recorded a peak day usage of 96.6 mgd during the summer months of 2012. For the purposes of this report, it was assumed that the other production facilities in the metro operated by Altoona, Ankeny, and West Des Moines were operating near full capacity.

Table 4-2 Distribution System Storage and Pump Station Assets

PHYSICAL ASSET	TOTAL CAPACITY, MG/MGD
DMWW - Allen Hazen Tower and Pump Station	2.0 MG – EST 18.5 MGD – PS
DMWW - Eastside Tower and Pump Station	2.0 MG – EST 11.5 MGD – PS
DMWW - LP Moon Ground Storage and Pump Station	6.0 MG – GST 21.5 MGD – PS
DMWW - Nollen Standpipe and Pump Station	4.0 MG – SP 20.0 MGD – PS
DMWW - Polk County Ground Storage and Pump Station	5.0 MG – GST 10.0 MGD – PS
DMWW - Tenny Standpipe	4.0 MG – SP
DMWW - Wilchinski Standpipe	2.4 MG – SP
WDMWW – 98th Street Tower	2.5 MG - EST
TOTAL GROUND STORAGE	**17.0 MG**
TOTAL ELEVATED STORAGE	**10.9 MG**
TOTAL PUMP STATION	**81.5 MGD**

[a] EST = Elevated Storage Tank: Allen Hazen tower effectively operates below the hydraulic grade line of the Pressure Zone 1 and therefore its capacity is considered to be ground storage capacity under normal operating conditions.
[b] SP = Standpipe: Tenny and Wilchinski standpipes effectively operate as elevated storage and are therefore considered to be included in the total elevated storage capacity calculation. However, due to their standpipe configuration their total effective capacity is significantly lower than the total capacity identified.
[c] PS = Pump Station

Table 4-3 Des Moines Water Works Transmission Main Assets

PHYSICAL ASSET	TOTAL LENGTH, FT
12-INCH	40
14-INCH	20,220
16-INCH	104,960
18-INCH	300
20-INCH	81,260
24-INCH	206,950
30-INCH	120,180
36-INCH	122,210
42-INCH	15,160
48-INCH	34,280
60-INCH	890
TOTAL	**706,450**

4.1.2 Asset Inspection

Black & Veatch and HR Green conducted inspections of all the proposed assets to identify the relative condition of the facilities in comparison to their respective age. Inspections were conducted in October and November of 2014 with the assistance of the owner's staff. Inspections were made of treatment/production facilities for Altoona, DMWW, and WDMWW and DMWW's storage and pump stations assigned to the Core Network.

4.1.3 Asset Review

A review of the assets was generally based on the relative age, condition, and type of material for treatment, supply, storage, and pumping facilities. In general, the condition of all facilities appeared to be commensurate with the age of the facility. The age and materials of construction were used to assign anticipated life expectancy, which factors into the cost depreciation as discussed below.

It should be noted that for the purposes of this study, no inspection, review, or hydraulic modeling was provided for the water transmission mains associated with DMWW's Core Network piping. Additional hydraulic modeling is recommended to determine if additional improvements are required. DMWW noted that high distribution system pressures at the Fleur WTP sometimes currently limit the pumping rate during high demand periods in order to prevent water main breaks on older water mains due to high pressures.

A summary of the strengths and weaknesses for the individual treatment/supply facilities are included in Table 4-4.

Table 4-4 Treatment Asset Strengths and Weaknesses Review

FACILITY	STRENGTHS	WEAKNESSES
Altoona WTPs	• Reliable and consistent source • Distributed facilities result in better hydraulic performance of the distribution system • Softened water	• Single well per WTP facility • Residual TDS and sulfates can result in taste and odor issues
Ankeny ASRs	• Consistent source of finished water to seasonally offset high finished water demand periods	• ASR recharge is contingent upon adequate finished water quality • Only available seasonally
DMWW Fleur WTP	• Three sources of supply (infiltration gallery and two river sources) • Lime softening process • Multiple and flexible treatment systems	• Age and condition • Limited hypochlorite and ferric chemical storage • No filter-to-waste • Water quality concerns w/DBPs • Limited mechanical nitrate removal capabilities • Located in floodplain
DMWW McMullen WTP and ASR	• Lime softening process • ASR located on-site • Treatment capacity expandable	• Currently limited by source water quantity • No mechanical nitrate removal capabilities
DMWW Saylorville WTP	• UF/RO treatment provides consistent finished water quality • Treatment capacity expandable • Full capacity mechanical nitrate removal	• Currently limited by source water quantity • Treatment capacity impacted by raw water temperature and hardness • Unproven adequacy of pretreatment for successful long-term UF membrane life
WDMWW A.C. Ward WTP	• Reliable and consistent source • Lime softening process	• Currently limited by source water quantity • Residual TDS and sulfates can result in taste and odor issues

4.2 ESTIMATION OF ORIGINAL COST LESS DEPRECIATION (OCLD)

As noted above, the asset inventory was derived to understand the assets that would be transferred to a new Regional Production Utility. Black & Veatch requested information from CIRDWC members related to these assets, including information such as the original cost invested to construct the assets, if available. Information was also requested with respect to current unit costs for items such

as mains, meters, and other assets. This data was used to derive an estimate of the original cost for various asset types. Additional explanation of the development of OCLD for assets contributed by individual utilities is provided in the following sections.

4.2.1 Original Cost

The asset inventory above provides a general overview of the major assets recognized by Black & Veatch as being necessary for a new Regional Production Utility. Generally, these assets included source of supply, treatment, pump stations, storage, transmission mains (including appurtenances), and wholesale meters.

For major facility type assets, e.g., wells, intakes, treatment plants, pump stations, etc., Black & Veatch primarily used original cost information provided by the utilities as a basis for the original cost estimate for their respective assets. For assets installed more recently, the cost and scale of the asset was reviewed for reasonableness, and in general Black & Veatch utilized these values as its estimate for original cost of major above ground facilities for DMWW and WDMWW. For Altoona and Ankeny's assets, the original cost was determined by estimating the current replacement cost value of the assets, and then trending the values back to their date of installation using *Handy-Whitman Bulletin No. 180: Cost Trends of Water Utility Construction* (Handy-Whitman Index). The trend factor for Ankeny's ASR wells and Altoona's treatment plants is the trend index value for the year of installation, divided by the trend index value for the current year for each asset type.

For transmission mains that primarily are owned by DMWW, available data consisted of Geographic Information System (GIS) data related to core network mains provided by DMWW. Original cost data was not associated with this data, therefore, Black & Veatch had to estimate the original cost of transmission mains. To do this, an estimate of replacement cost per foot of main was provided by DMWW and multiplied by the length of each main segment to derive the estimated replacement cost per segment of main provided in the GIS. The original cost for each segment was then determined by trending back the replacement cost to the year of installation noted in the GIS using trend indices from the Handy-Whitman Index. The trend factor for transmission mains is the trend index value for the year of installation, divided by the trend index value for the current year for each asset type. A similar approach was also used to derive the original cost for wholesale meters.

For the raw water quarries owned by Urbandale Water Works, Black & Veatch primarily relied on the value paid by Urbandale Water Works for the quarries and adjacent parcels based on invoices provided by Urbandale Water Works.

4.2.2 Accumulated Depreciation

Accumulated Depreciation provides an estimate of the decrease in value due to factors such as wear and tear, action of the elements, and obsolescence. For this Study, Black & Veatch utilized the straight line method for determining accumulated depreciation for assets.

There are two key elements needed for determining straight line depreciation. The first is the age of the asset. This data point was generally derived from asset data provided by the utilities. The other data point needed is the estimated service life for each asset. Black & Veatch and HR Green developed general, estimated service lives for various asset classes. The following provides an overview of estimated service lives for major assets:

- Structures & Improvements – 75 years
- Wells & Springs – 50 years
- Electric Pumping Equipment – 25 years
- Large Treatment Plant Equipment – 30 years
- Elevated Steel Tanks – 75 years
- Concrete Storage Reservoirs – 75 years
- Pre-stressed Concrete Transmission Mains – 100 years
- Polyvinyl Chloride (PVC) Transmission Mains – 50 years
- Ductile Iron Transmission Mains – 75 years
- Communication Equipment and SCADA – 20 years
- Laboratory Equipment – 10 years
- Wholesale Meters – 20 years

These general service life estimates were then reviewed for individual assets based on the site visits conducted by Black & Veatch. If based on the site visit Black & Veatch determined that an alternate service life was applicable, the service life was adjusted higher or lower to reflect our judgment of the service life of an individual asset. The accumulated depreciation factor to be applied to the original cost was determined by comparing the age of the asset to its estimated service life. The accumulated depreciation factor, multiplied by the asset original cost provided the estimated accumulated depreciation for each asset.

4.2.3 OCLD Results

The following Tables present the results of the OCLD for assets that potentially could be conveyed to a new Regional Production Utility.

4.2.3.1 DMWW OCLD Results

As can be seen on Table 4-5, the OCLD for DMWW assets is approximately $210.3 million. This total estimated OCLD is broken out by major asset class, including source of supply, treatment, boosters and storage, transmission mains, and miscellaneous assets. Included in the miscellaneous OCLD value is an estimate of going concern. Going concern generally recognizes that a buyer of assets would also purchase the business processes, vendor relationships, and other business-related items that allow the seller to efficiently conduct business on a day to day basis. For DMWW, Black & Veatch utilized a high level estimate of going concern of approximately $6.2 million derived from DMWW's 2013 operating income. The Miscellaneous line item also includes construction work in progress (CWIP) estimate to recognize value in core network assets that are already under construction and likely to be in service at the date of any transaction.

Table 4-5 Estimated OCLD Value of DMWW Assets

Line No.	Description	Original Cost	Original Cost Accumulated Depreciation	OCLD
	Source of Supply			
1	Des Moine River Intake	$9,165,000	$4,409,100	$4,755,900
2	Fleur Infiltration Gallery	$1,296,300	$937,800	$358,500
3	Maffitt Raw Water	$10,307,600	$1,955,800	$8,351,800
4	Maffitt Reservoir	$1,172,300	$679,800	$492,500
5	Saylorville Lake Storage	$3,033,500	$0	$3,033,500
6	Saylorville WTP Raw Water	$8,616,600	$448,300	$8,168,300
	Treatment			
7	Fleur WTP	$51,413,900	$25,290,000	$26,123,900
8	Fleur Nitrate Facility	$4,185,500	$2,417,600	$1,767,900
9	Fleur Laboratory	$534,900	$446,500	$88,400
10	McMullen WTP	$29,975,700	$9,402,100	$20,573,600
11	Saylorville WTP	$27,405,900	$3,561,700	$23,844,200
	Boosters and Storage			
12	Hazen Storage	$1,655,000	$1,001,200	$653,800
13	East Side Tower	$4,597,200	$198,900	$4,398,300
14	LP Moon Booster and Storage	$8,838,200	$2,825,200	$6,013,000
15	Polk Co. Storage	$2,177,200	$945,600	$1,231,600
16	Polk Co. Booster	$1,751,700	$1,189,000	$562,700
17	Standpipes	$2,731,400	$1,536,800	$1,194,600
18	ASR Wells	$6,558,400	$900,400	$5,658,000
	Transmission Mains			
19	Mains	$88,559,700	$17,826,300	$70,733,400
20	SWTP Feeder Main - Purch. Cap.	$5,411,600	$216,500	$5,195,100
21	Wholesale Meters	$210,000	$84,000	$126,000
	Miscellaneous			
22	General Office	$3,750,200	$999,000	$2,751,200
23	Other	$1,677,500	$1,462,100	$215,400
24	Miscellaneous	$13,370,000	$0	$13,370,000
25	**Total DMWW Assets**	**$288,395,300**	**$78,733,700**	**$209,661,600**

4.2.3.2 WDMWW OCLD Results

As presented in Table 4-6, the estimated OCLD value for WDMWW assets is approximately $17.1 million. This includes OCLD value primarily for wells, treatment plant, and the 98th Street storage reservoir as noted above in the asset inventory section. Similar to DMWW, high level estimate of going concern is provided for WDMWW in Line 6 of approximately $979,000 and is based on WDMWW's 2013 Net Operating Income.

Table 4-6 Estimated OCLD Value for WDMWW Assets

Line No.	Description	Original Cost	Original Cost Accumulated Depreciation	OCLD
	Source of Supply			
1	Wells and Equipment	$4,543,400	$1,582,200	$2,961,200
	Treatment			
2	Plant Structures and Buildings	$9,730,700	$3,385,700	$6,345,000
3	Treatment Equipment	$7,987,200	$4,389,400	$3,597,800
	Mains			
4	Raw and Finished Water	$604,200	$157,600	$446,600
	Storage			
5	98th Street Tower	$3,216,100	$385,500	$2,830,600
6	Miscellaneous	$979,000	$0	$979,000
7	**Total WDMWW Assets**	**$27,060,600**	**$9,900,400**	**$17,160,200**

4.2.3.3 Other OCLD Results

Table 4-7 provides the estimated OCLD value for assets contributed by Altoona, Ankeny, and Urbandale Water Works. These assets are consolidated on the same Table as their number of asset items is limited compared to DMWW and WDMWW. No estimate of going concern was determined for these assets.

Table 4-7 Estimated OCLD Value for Urbandale WW, Altoona, and Ankeny

Line No.	Description	Original Cost	Original Cost Accumulated Depreciation	OCLD
	Urbrandale			
1	Raw Water Quarries	$870,900	$0	$870,900
	Ankeny			
2	ASR Wells	$2,279,800	$468,600	$1,811,200
	Altoona			
3	Wells and Treatment Facilities	$8,145,700	$3,857,400	$4,288,300
4	**Total Other**	**$11,296,400**	**$4,326,000**	**$6,970,400**

4.3 ESTIMATION OF REPLACEMENT COST LESS DEPRECIATION (RCLD)

The replacement cost less depreciation (RCLD) provides an indication of the upper range of value related to the assets that would comprise the potential Regional Production Utility. Replacement cost reflects an estimate of what a potential buyer would have to pay to construct the regional production assets at present value. As with the OCLD analysis, accumulated depreciation is derived and subtracted from the replacement cost to reflect that value diminishes over time due to factors such as wear and tear, action of the elements, and obsolescence. The determination of the RCLD

value for the assets that would comprise the Regional Production Utility is discussed in the following sections.

4.3.1 Replacement Cost

For this Study, Replacement Cost reflects the estimated present day value that a potential buyer would have to invest to construct a regional production system similar to that constructed by DMWW, WDMWW, Altoona, Ankeny, and Urbandale Water Works. The replacement cost is generally designed to reflect what it would take a potential buyer to construct assets of similar scale and technology.

As with the original cost determination above, Black & Veatch relied on data provided by the utilities that included the original cost of the asset and the year of installation. For DMWW and WDMWW, this included asset schedules that included original cost, year of installation, and a description of the asset for above ground assets such as wells, treatment plants, storage tanks, pump stations, and other similar above ground assets. The original cost for these assets was trended to their respective replacement cost value using the Handy-Whitman Index. The trend index for the current year (2014), divided by the trend index for the year of installation by asset type provided the trend factor. The trend factor, multiplied by the original cost provided the replacement cost estimate. Black & Veatch and HR Green also evaluated the resulting replacement cost estimate for reasonableness using our knowledge of similar construction projects. If the replacement cost derived via trending was viewed to be too high or too low, Black & Veatch adjusted the replacement cost to reflect a reasonable replacement cost value based on our knowledge and experience.

The replacement cost for the core network transmission mains owned by DMWW was derived in the same manner as noted above in the description of the development of original cost. The estimated replacement cost per foot of main was multiplied by the applicable transmission main segment length to derive the replacement cost estimate.

For the ASR, treatment plant, and source of supply quarries owned by Ankeny, Altoona, and Urbandale Water Works, respectively, Black & Veatch derived estimated replacement cost estimates using engineering judgment and experience. These estimates were compared to known projects of similar scope and size to assess for reasonableness.

4.3.2 Accumulated Depreciation

As with the OCLD analysis, accumulated depreciation was derived to reflect that over time, the replacement cost value would diminish due to factors such as wear and tear, action of the elements, and obsolescence. Black & Veatch used the same general service life values, which are shown as follows, as the original cost analysis.

- Structures & Improvements – 75 years
- Wells & Springs – 50 years
- Electric Pumping Equipment – 25 years
- Large Treatment Plant Equipment – 30 years
- Elevated Steel Tanks – 75 years
- Concrete Storage Reservoirs – 75 years

- Pre-stressed Concrete Transmission Mains – 100 years
- Polyvinyl Chloride (PVC) Transmission Mains – 50 years
- Ductile Iron Transmission Mains – 75 years
- Communication Equipment and SCADA – 20 years
- Laboratory Equipment – 10 years
- Wholesale Meters – 20 years

Similar to the determination of accumulated depreciation for the original cost analysis, if Black & Veatch felt that based on site visits, a more reflective service life should be used, then the service life was adjusted to be more reflective of the observed condition.

Straight line depreciation was used to determine the accumulated depreciation using the following formula:

Accumulated Depreciation = ((Age / Service Life) x Replacement Cost)

If the age of the asset was greater than the service life, the accumulated depreciation was set equal to the replacement cost. The accumulated depreciation was then subtracted from the replacement cost to derive the estimated Replacement Cost Less Depreciation or RCLD.

4.3.3 RCLD Results

The following Tables present the results of the OCLD for assets that potentially could be conveyed to a new Regional Production Utility.

4.3.3.1 DMWW RCLD Results

Table 4-8 presents a summary of the estimated RCLD results for the core network assets of DMWW. As can be seen, the RCLD value for DMWW assets is approximately $365 million. This includes assets related to the source of supply intakes, collector wells, treatment plants, transmission mains, pump stations, and storage facilities of DMWW. As with the OCLD analysis, it also includes a high level miscellaneous value estimate for going concern and a provision for CWIP.

4.3.3.2 WDMWW RCLD Results

Table 4-9 presents a summary of the estimated RCLD results for WDMWW. This includes wells, the A.C. Ward WTP, 98th Street elevated storage tank, and miscellaneous raw and finished water mains. As with the OCLD analysis, a high level estimate for going concern is included in the RCLD value for WDMWW.

4.3.3.3 Other RCLD Results

Table 4-10 presents the estimated RCLD for the water assets currently owned by Urbandale Water Works, Ankeny, and Altoona.

Table 4-8 RCLD Results for DMWW

Line No.	Description	Replacement Cost	Accumulated Depreciation	RCLD
	Source of Supply			
1	Des Moine River Intake	$26,442,500	$12,929,400	$13,513,100
2	Fleur Infiltration Gallery	$16,715,000	$14,795,500	$1,919,500
3	Maffitt Raw Water	$16,569,800	$3,377,000	$13,192,800
4	Maffitt Reservoir	$15,864,400	$11,211,700	$4,652,700
5	Saylorville Lake Storage	$7,257,300	$0	$7,257,300
6	Saylorville WTP Raw Water	$9,754,800	$505,300	$9,249,500
	Treatment			
7	Fleur WTP	$208,435,800	$147,560,200	$60,875,600
8	Fleur Nitrate Facility	$9,167,600	$5,356,900	$3,810,700
9	Fleur Laboratory	$923,700	$830,500	$93,200
10	McMullen WTP	$51,015,200	$15,924,900	$35,090,300
11	Saylorville WTP	$30,448,200	$3,967,400	$26,480,800
	Boosters and Storage			
12	Hazen Storage	$7,020,100	$6,682,500	$337,600
13	East Side Tower	$4,826,000	$209,200	$4,616,800
14	LP Moon Booster and Storage	$11,326,300	$3,623,700	$7,702,600
15	Polk Co. Storage	$3,827,100	$1,661,900	$2,165,200
16	Polk Co. Booster	$3,775,800	$2,764,000	$1,011,800
17	Standpipes	$15,414,600	$10,858,800	$4,555,800
18	ASR Wells	$5,500,000	$777,300	$4,722,700
	Transmission Mains			
19	Mains	$216,318,000	$78,141,100	$138,176,900
20	SWTP Feeder Main - Purch. Cap.	$6,709,600	$268,400	$6,441,200
21	Wholesale Meters	$322,700	$129,100	$193,600
	Miscellaneous			
22	General Office	$7,337,900	$2,038,500	$5,299,400
23	Other	$4,214,000	$3,707,500	$506,500
24	Miscellaneous	$13,370,000	$0	$13,370,000
25	**Total DMWW Assets**	**$692,556,400**	**$327,320,800**	**$365,235,600**

Table 4-9 RCLD Results for WDMWW

Line No.	Description	Replacement Cost	Repl. Cost Accumulated Depreciation	RCLD
	Source of Supply			
1	Wells and Equipment	$8,957,900	$3,291,900	$5,666,000
	Treatment			
2	Plant Structures and Buildings	$30,636,700	$15,343,700	$15,293,000
3	Treatment Equipment	$13,388,500	$7,648,300	$5,740,200
	Mains			
4	Raw and Finished Water	$1,414,900	$370,500	$1,044,400
	Storage			
5	98th Street Tower	$5,800,000	$695,300	$5,104,700
6	Miscellaneous	$979,000	$0	$979,000
7	**Total WDMWW Assets**	**$61,177,000**	**$27,349,700**	**$33,827,300**

Table 4-10 RCLD Results for Urbandale Water Works, Ankeny, and Altoona

Line No.	Description	Replacement Cost	Accumulated Depreciation	RCLD
	Urbrandale			
1	Raw Water Quarries	$1,680,000	$0	$1,680,000
	Ankeny			
2	ASR Wells	$3,310,400	$729,700	$2,580,700
	Altoona			
3	Wells and Treatment Facilities	$23,050,800	$13,600,700	$9,450,100
4	**Total Other**	**$28,041,200**	**$14,330,400**	**$13,710,800**

4.4 COMBINED ESTIMATE OF VALUATION

The combined estimate of valuation reflects the combined value of assets contributed by the utilities of DMWW, WDMWW, Altoona, Ankeny, and Urbandale Water Works. The combined estimate of value reflects the range of value that provides a reasonable basis for establishing the fair market value of water utility assets that could be transferred to a new Regional Production Utility. As is seen in Table 4-11, the combined estimated range of valuation is approximately $234 million to $413 million. The low range value represents the sum of OCLD values for Tables 4-5 through 4-7, while the high range value represents the sum of RCLD values for Tables 4-8 through 4-10. The mid range represents the median between the low and high range.

Table 4-11 Combined Estimate of Valuation

Line No.	Description	Total Value Estimate
1	Low Range (OCLD)	$233,792,200
2	Mid Range	$323,283,100
3	High Range (RCLD)	$412,773,700

4.5 ESTIMATE OF PURCHASED CAPACITY VALUE

Beginning in approximately 1996, DMWW began entering into wholesale water contracts with surrounding communities that were experiencing customer growth, and as a result, needed additional water from DMWW. These wholesale water contracts are commonly referred to as Wholesale Water Service Master Agreements or Purchased Capacity Agreements. In approximately 2006, DMWW entered into a new Wholesale Water Service Master Agreement (2006 Agreement) with the original 1996 communities and several other communities that were also seeking access to additional water from DMWW. The 2006 agreement superseded the 1996 agreements.

In general, the communities seeking water from DMWW contributed an upfront amount of capital to help DMWW build the necessary treatment facilities that would provide additional water to the greater Des Moines region. The 2006 purchased capacity amount was $1.90 per gallon per day of capacity. Communities could elect to either pay DMWW upfront for their purchased capacity, or they could elect to have DMWW issue revenue bonds for the projects, and the community would pay their applicable share of the principal and interest due each year.

DMWW provided Black & Veatch with a summary of the original contributed amounts by entity and their associated current purchased capacity amounts. As is seen in Table 4-12, the amount contributed by the communities totals approximately $79 million. Since the 2006 Agreement indicates that the purchased capacity amounts were to be used to construct treatment and ASR facilities, Black & Veatch compared the original contribution amount in Table 4-12 to the original cost amounts in Table 4-5. The facilities related to Maffitt Raw Water, Saylorville WTP Raw Water, McMullen Water Treatment Plant, Saylorville Water Treatment Plant, Saylorville WTP Feeder Main, and ASR Wells reflect an original cost of approximately $88,275,800, which compares closely to the original contribution amount. As it appears that these DMWW assets were primarily constructed using purchased capacity contributions, Black & Veatch utilized the OCLD and RCLD amounts for these assets to derive an estimate of the purchased capacity value for the respective entities that entered into the Wholesale Water Service Master Agreement with DMWW. Table 4-13 presents the estimated range of purchased capacity value for the communities and/or utilities that purchased capacity from DMWW. This range represents Black & Veatch's estimate of the purchased capacity value contributed by the wholesale customers of DMWW. This purchased capacity value is not in addition to the estimated value of DMWW assets. The purchased capacity value reflects the portion of the DMWW value estimate that was contributed by the wholesale customers, and is used in the Net Value determination discussed in subsequent sections of this Report.

Table 4-12 Summary of Current Purchased Capacity Amounts and Original Contribution

Community/Utility	Current Purchased Capacity (mgd)	Original Capital Contribution
Polk Co. (SE and Unincorporated)	1.950	$1,937,500
Berwick Water Association	0.250	$310,000
Urbandale Water Works	15.300	$22,584,000
West Des Moines Water Works	8.973	$11,564,100
Ankeny	8.280	$12,365,000
Clive	6.980	$11,400,000
Waukee	3.694	$4,105,000
Warren Rural Water	3.246	$3,343,000
Xenia Rural Water	2.949	$3,623,400
Norwalk[1]	1.965	$2,353,800
Bondurant[2]	1.200	$2,940,000
Altoona	1.000	$1,900,000
Polk City	0.350	$665,000
Total	**56.137**	**$79,090,800**

[1] Includes original purchased capacity contribution from the City of Cumming, which was subsequently purchased by Norwalk.
[2] Includes original purchased capacity contribution from the City of Pleasant Hill, which was subsequently purchased by the City of Bondurant.

Table 4-13 Estimated Range of Purchased Capacity Value for Wholesale Customers

Line No.	Description	Original Cost	Replacement Cost	Original Cost Accumulated Depreciation	Replacement Cost Accumulated Depreciation	OCLD	RCLD
1	Maffitt Raw Water	$10,307,600	$16,569,800	$1,955,800	$3,377,000	$8,351,800	$13,192,800
2	Saylorville WTP Raw Water	$8,616,600	$9,754,800	$448,300	$505,300	$8,168,300	$9,249,500
3	McMullen WTP	$29,975,700	$51,015,200	$9,402,100	$15,924,900	$20,573,600	$35,090,300
4	Saylorville WTP	$27,405,900	$30,448,200	$3,561,700	$3,967,400	$23,844,200	$26,480,800
5	ASR Wells	$6,558,400	$5,500,000	$900,400	$777,300	$5,658,000	$4,722,700
6	SWTP Feeder Main	$5,411,600	$6,709,600	$216,500	$268,400	$5,195,100	$6,441,200
7	**Purchased Capacity Estimate**	**$88,275,800**	**$119,997,600**	**$16,484,800**	**$24,820,300**	**$71,791,000**	**$95,177,300**
8	**Mid Range Estimate**					**$83,484,200**	

4.6 OTHER CONTRIBUTED DMWW ASSETS

4.6.1 Joint East Side Project

During the course of this Study, Black & Veatch was also able to determine that the Joint East Side project was contributed by several wholesale customers and a full service customer of DMWW. The Joint East Side project generally consists of a pump station, transmission main, and an elevated 2.0 mgd storage tank. The project was designed to primarily serve the customers of Altoona, Pleasant Hill, and Polk County. From information provided by DMWW, it is estimated that the project cost is approximately $13 million. The assets are relatively new and Black & Veatch developed an estimated OCLD and RCLD value of $12,422,000 and $13,456,000, respectively.

Information provided by DMWW reflects that the project was split between the three communities as follows:

- Pleasant Hill – 61.54%
- Altoona – 30.77%
- Polk County – 7.69%

This estimated value is assigned to these communities in the Net Value determination in subsequent sections of this Report.

4.6.2 Polk City Feeder Main

DMWW indicated that a feeder main runs north along the west side of Ankeny to supply water to Polk City. Polk City contributed approximately $1,579,520 to complete this project which is owned by DMWW. The estimated value for this contribution is $1,516,339 (OCLD) to $1,880,056 (RCLD), with a mid range value of $1,698,197.

4.6.3 Ankeny Contribution to SWTP Feeder Main

DMWW indicated that Ankeny contributed approximately $772,350 toward the construction of the north feeder main related to the SWTP. The estimated value for this contribution is $741,456 (OCLD) to $919,305 (RCLD), with a mid range value of $830,381.

4.6.4 WDMWW 98th Street Elevated Storage Tank

Information provided by WDMWW indicates that its 98th Street Elevated Storage Tank includes an agreement with Clive and Waukee. These two entities contributed to the construction of this asset which is owned by WDMWW. The following presents the percentage split of the asset between the communities:

- WDMWW – 40%
- Clive – 40%
- Waukee – 20%

This estimated value is assigned to these communities in the Net Value determination in subsequent sections of this Report.

4.6.5 L.P. Moon Storage and Booster Station

DMWW indicated that the construction of the L.P. Moon Storage and Booster station was completed with contributions from several entities. DMWW staff reviewed the agreements related to this project, and indicated that more work would need to be done to readily determine the amount of contribution from several different entities. For purposes of this Study, any determined contribution for this asset would be assigned to the appropriate entity for purposes of determining their respective Net Value that is discussed in the following sections of this Report.

4.7 VALUATION CONCLUSION

The purpose of the estimated valuation is to derive an estimated range of value that CIRDWC members can use as a basis for contemplating the merits of forming a Regional Production Utility. The formation of a Regional Production Utility will require a transfer of assets. Therefore, understanding the estimated value to utilities that contribute water production assets is necessary to understand the potential upfront costs of any transaction.

It should be noted that the valuation estimate does not include an appraised value of land owned by any contributing utility. The estimated value is based on information available to Black & Veatch and reflects Black & Veatch's opinion of a reasonable estimate based on the Cost Approach methodology of valuation only. The use of the Income Approach and Market Approach were beyond the scope of this Study, but could help refine or establish a value estimate that is materially different than the range outlined herein.

The estimated valuation provides a basis for conducting the Financial Analysis discussed subsequently in this Report. For purposes of the Financial Analysis, Black & Veatch has chosen to select the mid range of the total valuation estimate, or approximately $323,283,100.

5 Financial Analysis

The next step in the Study was to assess the financial impact on CIRDWC members should a Regional Production Utility be formed. In general, Black & Veatch utilized a three step process to derive the potential impact on CIRDWC members compared to the current process that utilizes the Wholesale Water Service Master Agreements.

- Step 1: Determine the Net Value or Equity that would be contributed by members to the potential Regional Production Utility.
- Step 2: Determine the estimated revenue requirements (including transaction payments) that the potential Regional Production Utility would need during the first five years of operation.
- Step 3: Determine an effective uniform rate that would apply to members of the potential Regional Production Utility and compare to the current wholesale rate.

The financial analysis incorporates the findings of the valuation estimate into a five year financial projection, allowing potential participants to evaluate the financial impact of regionalization of joining the Regional Production Utility. The financial projection includes developing the revenue requirements for the new entity. These costs, applied to the estimated billed usage, derive an estimated effective unit cost per 1,000 gal.

5.1 NET VALUE ANALYSIS

The Net Value Analysis provides one path forward for transitioning from the current method of providing water to a potential Regional Production Utility. The main objective of the Net Value analysis is to bring potential participants into the Regional Production Utility on an equal basis. This includes determining the Net Value, or equity, contribution of participants on a per mgd of capacity basis, and performing any necessary adjustments to align participants with the same net value per mgd of capacity. A key assumption for this analysis is that DMWW, and all entities that have a Purchased Capacity Agreement with DMWW, will join the Regional Production Utility.

For purposes of this Net Value Analysis, Black & used the mid range value estimate, or approximately $323,283,100.

5.1.1 Summary of Estimated Value and Net Value per MGD

The first part of the Net Value analysis is to determine the net value per mgd of each entity. Net value is reflected on a per mgd basis as DMWW and the surrounding utilities have primarily designed the core network to serve a total capacity that includes the needs of DMWW and utilities that have a 2006 Agreement for purchased capacity with DMWW. The following Table presents a summary of the current net value by entity.

5.1.1.1 Total Capacity

The Total Capacity presented in Table 5-1, Column 1 and Column 2 includes the following:

- Total capacity of the DMWW system of 116 mgd, including 56.137 mgd of purchased capacity related to the 2006 Agreements. The net total capacity applicable to DMWW is 59.86 mgd.
- Additional total capacity contributed by utilities with production assets. This includes WDMWW (9.9 mgd); Altoona (3.9 mgd); and Ankeny (4.32 mgd).

Table 5-1 Summary of Total Capacity, Value, and Net Value by Entity (Mid Range Value)

Line No.	Description	(1) Total Capacity	(2) % Total Capacity	(3) Estimated Mid Range Value	(4) Estimated DMWW Outstanding Debt	(5) Estimated DMWW Debt Service Reserve	(6) Net Value	(7) % Net Value	(8) Net Value per mgd
		mgd					=(3)+(4)+(5)		=(6)/(1)
	Contributing Entities								
1	Des Moines Water Works	59.86	44.63%	$196,459,400	($5,996,800)	$703,400	$191,166,000	65.17%	$3,193,400
2	Polk Co. (SE and Unincorporated)	1.95	1.45%	$3,895,200	($679,800)	$0	$3,215,400	1.10%	$1,648,900
3	Berwick Water Association	0.25	0.19%	$371,800	($56,300)	$45,100	$360,600	0.12%	$1,442,400
4	Urbandale Water Works	15.30	11.41%	$24,028,800	($11,204,700)	$1,609,000	$14,433,100	4.92%	$943,300
5	West Des Moines Water Works	18.87	14.07%	$36,457,400	($4,541,500)	$708,100	$32,624,000	11.12%	$1,728,600
6	Ankeny	12.60	9.39%	$15,339,900	($9,983,100)	$959,500	$6,316,300	2.15%	$501,300
7	Clive	6.98	5.20%	$11,967,400	$0	$0	$11,967,400	4.08%	$1,714,500
8	Waukee	3.69	2.75%	$6,287,100	($805,100)	$171,000	$5,653,000	1.93%	$1,530,300
9	Warren Rural Water	3.25	2.42%	$4,827,300	$0	$0	$4,827,300	1.65%	$1,487,200
10	Xenia Rural Water	2.95	2.20%	$4,385,700	$0	$0	$4,385,700	1.50%	$1,487,200
11	Norwalk	1.97	1.47%	$2,922,200	($412,400)	$146,500	$2,656,300	0.91%	$1,351,800
12	Bondurant	1.20	0.89%	$1,784,600	($684,800)	$77,800	$1,177,600	0.40%	$981,300
13	Altoona	4.90	3.65%	$12,337,600	$0	$0	$12,337,600	4.21%	$2,517,900
14	Polk City	0.35	0.26%	$2,218,700	$0	$0	$2,218,700	0.76%	$6,339,100
15	**Total**	**134.12**	**100.00%**	**$323,283,100**	**($34,364,500)**	**$4,420,400**	**$293,339,000**	**100.00%**	**$2,187,100**

5.1.1.2 Estimated Total Value by Entity

Table 5-1, Column 3 presents the mid range value by entity and includes the following:

- Purchased capacity value for entities that have a 2006 Agreement for purchased capacity with DMWW. The estimated value for these entities is reflected in Table 5-2. The mid range purchased capacity value of $83,484,200 is distributed to the purchased capacity customers on the basis of their purchased capacity amounts.

Table 5-2 Purchased Capacity Mid Range Value by Customer

Line No.	Purchased Capacity Holder	Purchased Capacity	% Purchased Capacity	Estimated Value
		mgd		
1	Polk Co. (SE and Unincorporated)	1.950	3.47%	$2,899,900
2	Berwick Water Association	0.250	0.45%	$371,800
3	Urbandale Water Works	15.300	27.25%	$22,753,400
4	West Des Moines Water Works	8.973	15.98%	$13,344,200
5	Ankeny	8.280	14.75%	$12,313,600
6	Clive	6.980	12.43%	$10,380,300
7	Waukee	3.694	6.58%	$5,493,500
8	Warren Rural Water	3.246	5.78%	$4,827,300
9	Xenia Rural Water	2.949	5.25%	$4,385,700
10	Norwalk	1.965	3.50%	$2,922,200
11	Bondurant	1.200	2.14%	$1,784,600
12	Altoona	1.000	1.78%	$1,487,100
13	Polk City	0.350	0.62%	$520,500
14	**Total**	**56.137**	**100.00%**	**$83,484,200**

- Value of contributed assets from entities other than DMWW. This includes supply and treatment assets from WDMWW, Altoona, Urbandale Water Works, and Ankeny. For example, the total value for WDMWW shown in Column 3 of Table 5-1 reflects its purchased capacity value, plus contributed mid range value of assets ($36,457,400 = $13,344,200 + $23,113,200).
- Other significant contributions such as the Polk City feeder main and Joint East Side project for City of Pleasant Hill (included in DMWW as full service customer), Polk Co., and Altoona. Once determined, the contribution by entities related to the L.P. Moon storage and pumping station would also be included.

5.1.1.3 Net Outstanding Debt

Table 5-1, Columns 4 and 5 primarily presents the estimated outstanding debt held by DMWW related to core network, offset by applicable debt service reserve amounts. This outstanding debt is primarily debt that was issued by DMWW on behalf of purchased capacity customers. With any transfer of assets from DMWW to a new Regional Production Utility, the outstanding debt held by DMWW would need to be addressed. For purposes of this Study and Report, Black & Veatch has assumed that at the time of any transaction, DMWW would be compensated by the new Regional

Production Utility to retire the outstanding debt, less outstanding debt service reserve amounts. Additional legal and financial analysis should be undertaken before any potential transaction to determine whether this is feasible or not.

Black & Veatch was also able to determine that Ankeny has some outstanding debt related to its ASR wells. This amount is approximately $1,545,000 and is included in Table 5-1, Column 4, Line 6.

Black & Veatch also recognizes that some entities may have outstanding debt related to their 2006 Agreements. For purposes of this study, Black & Veatch assumes that those entities would continue to pay the principal and interest payments related to that debt after any potential transaction.

5.1.1.4 Estimated Net Value by Entity

Table 5-1, Column 6 presents the net value by entity. It is derived by subtracting the net outstanding debt held by DMWW from the total value related to the core network. The percentage of net value by entity is presented in Table 5-11, Column 7.

Table 5-1, Column 8 presents the net value per mgd of capacity by entity. It is derived by dividing Column 6 by Column 1. As can be seen, the net value per mgd by entity is not uniform. DMWW with the contribution of a majority of assets reflects the highest net value per mgd, while Ankeny reflects the lowest net value per mgd. The lower net value per mgd value for Ankeny is primarily related to the fact that its contribution for the 2006 Agreement was primarily financed through debt issued by DMWW. There is also some outstanding debt related to Ankeny's ASR wells of approximately $1,545,000 that would likely need to be retired at the time of the transaction.

5.1.2 Alignment of Net Value by Entity

As indicated above, the entities contributed varying levels of net value on a per mgd basis. To bring each entity into the potential Regional Production Utility on an equal basis, Black & Veatch performed a two-step process to align the net value of each entity on a per mgd basis. The first step includes buying down the net value of DMWW to a level more consistent with the other entities. This results in a new, lower net value per mgd for DMWW. The second step includes aligning the net value of all others to the new, lower net value of DMWW. Table 5-3 presents the alignment of customers on a net value per total capacity basis. Table 5-3, Column 1 restates the Net Value by entity as reflected on Table 5-1.

5.1.2.1 Cash Payment to DMWW

The cash payment to DMWW is the first step in aligning the net value per total capacity of the entities and is shown in Table 5-3, Column 2. Black & Veatch used an estimated cash payment of $100 million. It is assumed for the Study and this Report that the cash payment would be funded from debt issued by the Regional Production Utility. The principal and interest related to this payment would be included in the annual revenue requirements of the new entity and payable as part of its uniform rate which is discussed later in this report.

The cash payment to DMWW results in a new net value of approximately $91,166,000. When divided by the total capacity applicable to DMWW the result is $1,522,900 per mgd of total capacity.

Table 5-3 Alignment of Net Value per Total Capacity by Entity

Line No.	Description	(1) Net Value	(2) Cash Payment Des Moines Water Works	(3) Net Contributions (To)/From Other Entities	(4) Adjusted Net Value	(5) Restated Total Capacity	(6) Adjusted Net Value per mgd
					(1)+(2)+(3)		(4) / (5)
	Contributing Entities						
1	Des Moines Water Works	$191,166,000	($100,000,000)		$91,166,000	59.86	$1,522,900
2	Polk Co. (SE and Unincorporated)	$3,215,400		($245,800)	$2,969,600	1.95	$1,522,900
3	Berwick Water Association	$360,600		$20,200	$380,800	0.25	$1,522,900
4	Urbandale Water Works	$14,433,100		$8,867,400	$23,300,500	15.30	$1,522,900
5	West Des Moines Water Works	$32,624,000		($3,882,200)	$28,741,800	18.87	$1,522,900
6	Ankeny	$6,316,300		$12,872,400	$19,188,700	12.60	$1,522,900
7	Clive	$11,967,400		($1,337,400)	$10,630,000	6.98	$1,522,900
8	Waukee	$5,653,000		($27,300)	$5,625,700	3.69	$1,522,900
9	Warren Rural Water	$4,827,300		$116,100	$4,943,400	3.25	$1,522,900
10	Xenia Rural Water	$4,385,700		$105,500	$4,491,200	2.95	$1,522,900
11	Norwalk	$2,656,300		$336,200	$2,992,500	1.97	$1,522,900
12	Bondurant	$1,177,600		$649,900	$1,827,500	1.20	$1,522,900
13	Altoona	$12,337,600		($4,875,300)	$7,462,300	4.90	$1,522,900
14	Polk City	$2,218,700		($1,685,700)	$533,000	0.35	$1,522,900
15	**Total**	**$293,339,000**	**($100,000,000)**	**$10,914,000**	**$204,253,000**	**134.12**	**$1,522,900**

5.1.2.2 Alignment of Net Value per MGD of Other Entities

Once the new net value per total capacity of $1,522,900 for DMWW was established, Black & Veatch derived the estimated contribution that would be made by, or made to the other entities to achieve alignment with DMWW. This contribution is reflected in Table 5-3, Column 3. Negative values reflect cash payments to entities to align their net value per total capacity at $1,522,900 per mgd. Positive values reflect cash payments from the respective entities to the new Regional Production Utility to align their net value per total capacity at $1,522,900 per mgd. Table 5-3, Column 4 reflects the new adjusted net value per mgd by entity post contribution. Table 5-3, Column 5 restates the total capacity by entity. The Column 4 adjusted net value is divided by this total capacity to reflect the adjusted net value per mgd in Column 6. As can be seen, the cash payment to DMWW, combined with contributions both to and from the entities, aligns all participants on the same basis.

5.1.3 Summary of Net Value Analysis

The Net Value analysis aligns each of the potential members of the Regional Production Utility on an equal basis. This alignment is key for several reasons. First it establishes each community on an equal basis in terms of their respective contribution, or net value, to the new Regional Production Utility. This alignment helps explain to policy makers and the public that the communities are coming into the endeavor on an equal basis. Second, the alignment paves the way for justification of uniform rates, which was a desire from many CIRDWC members during the Stakeholder Input phase of the Study. As is seen in Table 5-4, the alignment achieves equal footing for participants both in terms of net value and their respective percentage of total capacity.

Table 5-4 Summary of Alignment of Net Value and Total Capacity

Line No.	Description	Adjusted Net Value	% Adjusted Net Value	Total Capacity	% Total Capacity
	Contributing Entities				
1	Des Moines Water Works	$91,166,000	44.63%	59.86	44.63%
2	Polk Co. (SE and Unincorporated)	$2,969,600	1.45%	1.95	1.45%
3	Berwick Water Association	$380,800	0.19%	0.25	0.19%
4	Urbandale Water Works	$23,300,500	11.41%	15.30	11.41%
5	West Des Moines Water Works	$28,741,800	14.07%	18.87	14.07%
6	Ankeny	$19,188,700	9.39%	12.60	9.40%
7	Clive	$10,630,000	5.20%	6.98	5.20%
8	Waukee	$5,625,700	2.75%	3.69	2.75%
9	Warren Rural Water	$4,943,400	2.42%	3.25	2.42%
10	Xenia Rural Water	$4,491,200	2.20%	2.95	2.20%
11	Norwalk	$2,992,500	1.47%	1.97	1.47%
12	Bondurant	$1,827,500	0.89%	1.20	0.90%
13	Altoona	$7,462,300	3.65%	4.90	3.65%
14	Polk City	$533,000	0.26%	0.35	0.26%
15	**Total**	**$204,253,000**	**100.00%**	**134.12**	**100.00%**

The Net Value analysis results in cash payment to DMWW. The cash payments are related to the retirement of outstanding debt held by DMWW, and also a cash payment to lower DMWW's net

value to a level closer to the other entities. For purposes of this Study, the cash payments would be made by the new Regional Production Utility most likely through the issuance of debt that would then be paid back by all members. Table 5-5 presents a summary of the mid range value and derivation of the net value, or equity of the potential Regional Production Utility.

Table 5-5 Summary of Net Value or Equity

Line No.	Description	Breakdown of Value
1	Total Value Estimate - Mid Range	$323,283,100
2	Cash Payment to DMWW	($100,000,000)
3	Net Cash Payment to DMWW for Debt	($29,944,100)
4	Contributions From Participants	$22,967,700
5	Contributions To Participants	($12,053,700)
6	**Total Net Value (Equity)**	**$204,253,000**

As Table 5-5 shows, the net value equates to approximately $204 million and consists of the total value, offset by cash payments to DMWW and net contributions from other entities. The net value is approximately 63 percent of the total mid range value. The amounts for the cash payments to DMWW to reduce DMWW's net value and defease DMWW debt will be included in the following sections.

5.1.3.1 Potential Buy In Amount for Non-Members

There are several communities that receive their complete water service from DMWW. For purposes of this Study, their capacity is included in the DMWW line item. There is also the City of Johnston, which is a wholesale customer of DMWW that did not enter into a Purchased Capacity Agreement. Thus, the question was posed to Black & Veatch: "what would Johnston have to contribute to gain participation in the new Regional Production Utility?" The Net Value analysis provides a basis for accepting new members to the Regional Production Utility.

For the City of Johnston, its current peak day water need multiplied by the net value per mgd seen above in Table 5-3 could provide contribution necessary. Black & Veatch utilized an estimated peak day demand for the City of Johnston of 7.0 mgd. This peak day demand, multiplied by $1,522,900 equals $10,660,300, and could serve as one contribution basis for accepting new participants.

Additionally, should the CIRDWC members determine to pursue the Regional Production Utility, a similar method could be used for full service customers served by DMWW. Consideration will need to be given to the distribution of total capacity compared to DMWW. As mentioned previously, the demand for the City of Johnston and full service customers of DMWW is included in the total DMWW capacity of 59.86 mgd.

5.2 DEVELOPMENT OF FIVE YEAR FINANCIAL PROJECTION

For purposes of the financial analysis, Black & Veatch developed a five year projection of revenue requirements that include : (1) operation and maintenance (O&M) expense, (2) annual renewal and replacement costs, (3) debt service and/or cash financing of major capital improvements, (4) debt

service and/or cash financing of the repayment of outstanding debt currently held by DMWW related to Purchased Capacity Agreements or the construction of the core network, and (5) debt service and/or cash financing of the payment to DMWW to achieve alignment between system capacity and net value.

5.2.1 Operation and Maintenance Expense

The operating budgets for DMWW, WDMWW, and Altoona were utilized to develop a projected operating budget for the assets to be contributed by these entities to the Regional Production Utility. The elements of operation and maintenance expense include the annual expense associated with source of supply, treatment, pump station, storage, and transmission mains associated with the contributed assets as well as administrative costs associated with the new Regional Production Utility.

A summary of proposed operation and maintenance expense is presented in Table 5-6. The projected operation and maintenance expense reflects DMWW 2015 proposed budget for Water Production which includes labor and non-labor expenses associated with the maintenance, energy and chemicals for the three WTPs, storage and pumping, laboratory, facility and vehicle maintenance, communication system, and HVAC. The expenses associated with Des Moines Remote Storage has been excluded since O&M for these facilities will remain with DMWW. In addition, an allowance has been made for O&M associated with DMWW's core network transmission system.

Projected operation and maintenance expense for WDMWW reflects its draft 2015 budget amounts for Water Treatment Plant excluding the costs associated with purchased water, as well as a grant for an aerator retrofit. The 2015 budget for the City of Ankeny's two ASR wells is based on a percentage of DMWW's budget for L.P. Moon Pumping and Maintenance. The City of Altoona's 2015 proposed budget for Water Operations was the basis for projected operation expense associated with the City's treatment plants and wells.

Table 5-6 Proposed Operation & Maintenance Expense

Line No.	Description	Budget 2015	2016	2017	2018	2019	2020
	Des Moines Water Works						
1	Production	$15,122,500	$15,576,200	$16,043,500	$16,524,800	$17,020,500	$17,531,100
2	Core Network Distribution System	1,536,000	1,582,100	1,629,600	1,678,500	1,728,900	1,780,800
	West Des Moines Water Works						
3	Production	2,647,164	2,726,600	2,808,400	2,892,700	2,979,500	3,068,900
	City of Ankeny						
4	ASR Wells	127,207	131,000	134,900	138,900	143,100	147,400
	City of Altoona						
5	Production	852,392	878,000	904,300	931,400	959,300	988,100
	New Authority						
6	Administration		4,178,800	4,304,100	4,433,300	4,566,300	4,703,300
7	**Estimated Savings**				(1,111,800)	(1,145,200)	(1,179,600)
8	**Total**	**$20,285,263**	**$25,072,700**	**$25,824,800**	**$25,487,800**	**$26,252,400**	**$27,040,000**

In addition to the O&M identified above associated with the contributed assets, administrative costs associated with the new Regional Production Utility need to be considered. These costs include personnel, materials, and supplies associated with human resources, finance, information technology, engineering, and management of the new entity. Based on previous efficiency studies performed by Black & Veatch, a reasonable estimate of administrative expenses associated with the new entity is approximately 20 percent of the total of all other expenses. This amount is shown on Line 6 of Table 5-6.

It is anticipated that the new Regional Production Utility will eventually experience savings associated with a reduction in the duplication of services and the consolidated purchasing of materials and supplies. Estimated savings are projected to impact O&M associated with chemical and energy costs associated with DMWW's and WDMWW's water treatment plants. Additional savings could be realized by coordinating O&M activities related to facility maintenance, vehicle maintenance, communication system, and HVAC O&M between DMWW, WDMWW, and Altoona. These savings are estimated to begin in 2018 and are shown on Line 7 of Table 5-6.

O&M expense projections for the years 2016 through 2020 are based on budgeted 2015 expense amounts adjusted to include an allowance for inflation, estimated at 3 percent annually. As shown in Table 5-6, O&M expense is projected to increase from $25,072,700 in 2016 to $27,040,000 by 2020.

5.2.2 Annual Renewal and Replacement

Annual renewal and replacement expenditures include those costs which tend to be routinely incurred each year for normal replacements, extensions, and minor improvements. Projected renewal and replacement costs were estimated using the replacement cost and average service life from the valuation analysis above, as well as looking at the historical capital spend for DMWW. Projected renewal and replacement costs are determined as presented in Table 5-7.

Table 5-7 Projected Renewal and Replacement

Line No.	Description	2016	2017	2018	2019	2020
1	Des Moines Water Works	$9,700,000	$9,700,000	$9,700,000	$9,700,000	$9,700,000
2	West Des Moines Water Works	1,390,000	1,063,000	938,000	1,390,000	1,390,000
3	City of Ankeny	66,000	66,000	66,000	66,000	66,000
4	City of Altoona	460,000	460,000	460,000	460,000	460,000
5	**Total**	**$11,616,000**	**$11,289,000**	**$11,164,000**	**$11,616,000**	**$11,616,000**

5.2.3 Major Capital Improvement Costs

Projected expenditures for major capital improvements consist of projects associated with the contributed assets provided by DMWW, WDMWW, and Altoona. Based on DMWW's capital budget, improvements during the 2016-2020 study period consists of projects associated with Facility Maintenance, Raw Water Maffitt, the Fleur Drive Treatment Plant, and the McMullen Treatment Plant.

Anticipated projects for WDMWW's production assets consist of repainting ground storage tanks No. 1 and No. 2, and replacement of the lime slaker at the A.C. Ward WTP. To meet future water demands beyond the year 2020, projects related to Altoona's production assets include construction of a new well at Water Treatment Plant No. 1 to replace Well No. 2, and replacement of major equipment components at Water Treatment Plant No.1. The five-year major capital improvement program costs are estimated to total $15,615,400 and are shown in Table 5-8.

Table 5-8 Major Capital Improvement Program

Line No.	Description	2016	2017	2018	2019	2020
1	Des Moines Water Works	$6,198,700	$5,639,300	$0	$0	$0
2	West Des Moines Water Works	0	327,000	452,000	0	0
3	City of Altoona	0	0	0	0	2,998,400
4	**Total**	**$ 6,198,700**	**$5,966,300**	**$452,000**	**$0**	**$2,998,400**

5.2.4 Repayment of Outstanding Purchase Capacity Debt

As mentioned in the Net Value Analysis section, Black & Veatch has assumed that at the time of any transaction, DMWW would be compensated by the new Regional Production Utility to retire outstanding debt issued by DMWW on behalf of purchased capacity customers. This amount, as shown in Table 5-1, Column 4 totals $34,364,000. It is assumed that the debt service reserve seen in Table 5-1, Column 5 will offset the outstanding debt service. This results in a net outstanding debt payment of $29,944,000.

5.2.5 Adjustment to Des Moines Water Works' Net Value

As discussed in the Net Value Analysis section of this Report, in order to bring each entity into the potential Regional Production Utility on an equal basis, a two-step process was used to align the net value of each entity on a per mgd basis. The first step was to buy down the net value of DMWW to a level more consistent with other entities using a cash payment of $100,000,000. The second step, which involves an estimated contribution that would be made by, or made to the other entities, would align the net value of all others to the new, lower net value of DMWW. This value, as shown in Column 3 of Table 5-3 is $10,914,000. The net cash payment of $89,086,000 consists of the cash payment to DMWW, offset by the contributions to and from the entities.

5.2.6 Major Capital Improvement Financing

Table 5-9 presents the capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. This plan anticipates that proposed capital improvements will be financed from a combination of bond proceeds and annual operating revenue; however, other alternatives can be considered and are discussed later in this section.

Table 5-9 Estimated Capital Financing Plan

Line No.	Description	2016	2017	2018	2019	2020
	Construction Funds Available					
1	Beginning Balance	$ -	$ 6,242,500	$ 338,900	$ 392,800	$ 396,700
2	Revenue Bond Proceeds	142,500,000	0	0	0	0
3	Transfer from Operating Fund (Cash Financing)	0	0	500,000	0	3,000,000
4	Interest Income	62,200	62,700	5,900	3,900	19,100
5	Total Funds Available	$ 142,562,200	$ 6,305,200	$ 844,800	$ 396,700	$ 3,415,800
	Construction Funds Used					
6	Major Capital Improvements	$ 6,198,700	$ 5,966,300	$ 452,000	$ -	$ 2,998,400
7	Repayment of Outstanding DMWW Debt	29,944,000	0	0	0	0
8	Net Cash Payment to DMWW	89,086,000	0	0	0	0
9	Revenue Bond Issuance Expense	2,850,000	0	0	0	0
10	Revenue Bond Debt Service Reserve Requirement	8,241,000	0	0	0	0
11	Total Funds Utilized	$ 136,319,700	$ 5,966,300	$ 452,000	$ -	$ 2,998,400
12	**Ending Balance**	$ 6,242,500	$ 338,900	$ 392,800	$ 396,700	$ 417,400

Line 1 indicates that the Regional Production Utility will begin 2016 with no unencumbered cash or investments available to fund capital cost. An option would be to use some or all of the contributions from other entities to initially fund the construction fund, however, that option is not presented in this Report. A revenue bond issue in the amount of $142,500,000 in 2016 is projected and shown on Line 2 of Table 5-9. The proceeds of this issuance will fund all capital related costs in 2016 and 2017. The amounts and years of each loan are developed considering capital program needs and other sources of capital improvement financing.

Cash financing of capital improvements from annual revenues is expected to total $3,500,000 for the study period as indicated on Line 3 of Table 5-9. Interest income on the capital funds, which is shown on Line 4, reflects an assumed 1.0 percent annual interest rate. Line 5 shows the total of all funds available to finance the capital improvement program.

The application of funds show that $15,615,400 major capital improvements expenditures are projected over the planning period as shown on Line 6. Line 7 shows the net repayment of outstanding debt currently held by DMWW related to the core network and purchased capacity. The net cash payment to DMWW to achieve alignment between the system capacity and net value is presented on Line 8. Line 9 of Table 5-9 shows the debt issuance costs associated with the projected bond issuance. This cost is estimated to be 2.0 percent of the total issuance amount. Line 10 reflects the estimated debt service reserve requirement which is equal to annual principal and interest. The issuance cost and debt service reserve amounts are assumed to be funded from the bond proceeds.

Line 11 shows the total of all fund applications. The end of year balance is shown on Line 12, and reflects Line 11 subtracted from Line 5.

5.2.7 Projection of Annual Revenue Requirements and Effective Rate

Table 5-10 shows the projected financial obligations for the new Regional Production Utility for the period 2016 through 2020. This table summarizes O&M expense, debt service requirements on

proposed bonds, the transfer of operating funds for major capital improvement financing, and capital renewal and replacement costs.

O&M expense, previously projected in Table 5-6, is shown on Line 1. Estimated debt service requirements on revenue bonds projected to be issued to help finance major capital program expenditures and other capital requirements are shown on Lines 2 and 3. Revenue bonds indicated to be issued during the study period are assumed to be 30 year, 4.0 percent fixed interest bonds with equal annual payments of principal and interest. Line 4 reflects the projected transfer of funds from operations to assist in major capital financing. Capital outlay for renewals and replacements is shown on Line 5 of Table 5-10. Line 6 indicates the total revenue requirements for the five year period.

Table 5-10 Summary of Revenue Requirements and Unit Cost Development

Line No.	Description	2016	2017	2018	2019	2020
1	Operating Expense	$25,072,700	$25,824,800	$25,487,800	$26,252,400	$27,040,000
	Debt Service					
2	Projected Future Bonds	8,241,000	8,241,000	8,241,000	8,241,000	8,241,000
3	Total Debt Service on Bonds	8,241,000	8,241,000	8,241,000	8,241,000	8,241,000
4	Cash Financing of Major Capital	0	0	500,000	0	3,000,000
5	Renewals & Replacement	11,616,000	11,289,000	11,164,000	11,616,000	11,616,000
6	Total Revenue Requirements	$44,929,700	$45,354,800	$45,392,800	$46,109,400	$49,897,000
7	Projected Usage - 1,000 gal.	17,857,100	18,010,100	18,165,300	18,322,900	18,482,900
8	**Unit Cost - $/1,000 gal.**	**$2.52**	**$2.52**	**$2.50**	**$2.52**	**$2.70**

To determine the effective unit cost per 1,000 gallons of billed water consumption, usage from each of the 14 contributing entities was projected based on historical billed usage provided by DMWW. A summary of historical and projected water usage is presented in Table 5-11. Projected quantities are based on (1) recognition of historical usage quantities and trends, (2) total water consumption by the contributing entities, and (3) projected growth rates in the customer base.

Table 5-11 Projected Billed Water Usage

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Line No.	**Description**	**2013**	**2014**	**2-year Average**	**Projection Base**	**2016**	**2017**	**2018**	**2019**	**2020**
		1,000 gal.	**1,000 gal.**	**1,000 gal.**	**1,000 gal.**	**1,000 gal.**	**1,000 gal.**	**1,000 gal.**	**1,000 gal.**	**1,000 gal.**
	Contributing Entities									
1	Des Moines Water Works	7,931,336	7,387,434	7,659,385	7,659,385	7,659,385	7,659,385	7,659,385	7,659,385	7,659,385
2	Polk Co. (SE and Unincorporated)	693,540	640,478	667,009	667,009	687,169	697,477	707,939	718,558	729,336
3	Berwick Water Association	29,449	32,930	31,189	31,189	32,132	32,614	33,103	33,599	34,103
4	Urbandale Water Works	1,668,940	1,415,742	1,542,341	1,542,341	1,588,958	1,612,793	1,636,985	1,661,539	1,686,462
5	West Des Moines Water Works	899,201	739,937	819,569	2,469,969	2,544,624	2,582,793	2,621,535	2,660,858	2,700,771
6	Ankeny	1,716,937	1,531,156	1,624,046	1,624,046	1,673,133	1,698,230	1,723,703	1,749,559	1,775,802
7	Clive	659,958	584,555	622,256	622,256	641,064	650,680	660,440	670,346	680,402
8	Waukee	437,206	395,094	416,150	416,150	428,728	435,159	441,686	448,312	455,036
9	Warren Rural Water	670,806	557,656	614,231	614,231	632,796	642,288	651,922	661,701	671,627
10	Xenia Rural Water	513,240	612,208	562,724	562,724	579,732	588,428	597,255	606,214	615,307
11	Norwalk	254,975	239,462	247,219	247,219	254,691	258,512	262,389	266,325	270,320
12	Bondurant	118,588	148,747	133,667	133,667	137,707	139,773	141,869	143,997	146,157
13	Altoona	150	22	86	876,000	902,477	916,014	929,754	943,701	957,856
14	Polk City	99,447	84,015	91,731	91,731	94,504	95,921	97,360	98,820	100,303
15	**Total**	**15,693,772**	**14,369,436**	**15,031,603**	**17,557,917**	**17,857,100**	**18,010,066**	**18,165,326**	**18,322,915**	**18,482,868**

Based on historical data provided by DMWW, it was determined that usage in 2013 and 2014 reflects typical weather conditions and water usage, therefore, the average of 2013 and 2014 was used as the basis for projected water usage. The historical water consumption for West Des Moines Water Works and the City of Altoona does not reflect water produced by the water treatment plants currently owned and operated by those entities. Under the Regional Production Utility, these plants would be included in the assets purchased. Therefore, the water provided by these plants to serve the Cities of West Des Moines and Altoona is included in the projection base for the new Regional Production Utility, and is shown in Column 6 of Table 5-11. Projected usage through 2020 reflects 0.0 percent growth for the Des Moines Water Works service area and 1.5 percent growth for all other entities. This reflects conservative estimates based on historical growth and assumed future growth as provided by each entity. Sales volumes for this period are projected to increase at an average rate of about 1.0 percent annually.

Line 8 of Table 5-10 shows the projected unit cost for water purchased from the new entity per 1,000 gallons based on the revenue requirements on Line 6 divided by the projected billed usage shown on Line 7.

5.2.8 Financing alternatives

The unit costs determined in the previous section are based on financing all capital related costs in 2016 and 2017 with the issuance of a revenue bond. As an alternative, if the new Regional Production Utility could reach agreement on a repayment schedule directly with DMWW, then a smaller revenue bond could be issued for the remaining capital costs and the new Regional Production Utility would pay less in bond issuance costs and debt service reserve. Table 5-12 reflects the proposed revenue requirements and unit cost for this scenario. Proposed debt service on Line 2 reflects a revenue bond issue in the amount of $51,000,000 which would be used to fund the repayment of outstanding DMWW debt and major capital projects in 2016 and 2017. Line 4 shows the estimated annual payments the new Regional Production Utility would make directly to DMWW as payment to achieve alignment between the system capital and net value. These payments are based on a 40-year term and 5 percent interest. Line 9 indicates that this financing option would have a favorable impact on the proposed unit costs when compared to debt financing all initial capital costs.

Table 5-12 Alternative Revenue Requirements and Unit Cost Development

Line No.	Description	2016	2017	2018	2019	2020
1	Operating Expense	$25,072,700	$25,824,800	$25,487,800	$26,252,400	$27,040,000
	Debt Service					
2	Projected Future Bonds	2,660,000	2,660,000	2,660,000	2,660,000	2,660,000
3	Total Debt Service on Bonds	2,660,000	2,660,000	2,660,000	2,660,000	2,660,000
4	Net Cash Payment to DMWW	5,192,000	5,192,000	5,192,000	5,192,000	5,192,000
5	Cash Financing of Major Capital	0	0	500,000	0	3,000,000
6	Renewals & Replacement	11,616,000	11,289,000	11,164,000	11,616,000	11,616,000
7	Total Revenue Requirements	$44,540,700	$44,965,800	$45,003,800	$45,720,400	$49,508,000
8	Projected Usage - Mgal	17,857,100	18,010,100	18,165,300	18,322,900	18,482,900
9	**Unit Cost - $/Mgal**	**$2.49**	**$2.50**	**$2.48**	**$2.50**	**$2.68**

5.2.9 Effective Rate sensitivity

In an effort to determine how much the unit costs will fluctuate as a result of changes in assumptions, a rate sensitivity analysis was performed comparing the initial base run (Table 5-10) against 3 alternatives. The results are summarized in Table 5-13. Line 1 of Table 5-13 reflects the same unit costs shown in Table 5-10.

The first variable to be considered was the estimated fair market value for the contributed assets. The initial base run shown in Tables 5 and 6 is based on the mid-range value of assets; however, the revenue requirements were also determined using the low-range value of assets. The resulting unit costs are presented in Line 4 of Table 5-13 and reflect a decrease of approximately 4 percent.

The second variable considered was the estimated renewal and replacement costs. The estimated renewal and replacement costs reflect a high level, conservative estimate. However, additional planning and engineering could result in a lower, actual amount. Therefore, the estimated renewal and replacement costs were reduced by 15 percent. Lines 2 and 5 in Table 5-13 reflect the reduced unit costs for the mid-range and low-range valuation, respectively.

Table 5-13 Rate Sensitivity Comparison

Line No.	Description	2016	2017	2018	2019	2020
		$/1,000 gal.	$/1,000 gal.	$/1,000 gal.	$/1,000 gal.	$/1,000 gal.
	Mid-Range Valuation					
1	Conservative Base Run	$2.52	$2.52	$2.50	$2.52	$2.70
2	Reduction in R&R	$2.42	$2.42	$2.41	$2.42	$2.61
3	Higher Usage Projection	$2.49	$2.48	$2.44	$2.44	$2.61
	Low-Range Valuation					
4	Conservative Base Run	$2.40	$2.41	$2.39	$2.41	$2.59
5	Reduction in R&R	$2.31	$2.31	$2.30	$2.31	$2.50
6	Higher Usage Projection	$2.38	$2.37	$2.33	$2.34	$2.50

The third variable considered for the sensitivity analysis was the growth rate of projected billed water usage. The growth assumptions used in the initial base run reflect a conservative overall annual growth rate of 1.0 percent. The unit costs shown in Lines 3 and 4 of Table 5-13 reflect a slightly higher annual growth rate of 1.5 percent. The unit costs decrease by approximately 1.5 percent.

5.3 ANALYSIS OF EFFECTIVE RATE

In an effort to provide a comparison between the effective rates presented in this Report and DMWW's existing wholesale rates, it is useful to take into consideration the effective rate that contributing entities are currently paying for purchased water. The current effective rate takes into consideration the purchased capacity rate charged by DMWW, as well as the outstanding debt service related to Purchased Capacity Agreements.

DMWW issued debt for each of the four entities shown on Lines 1 through 4 of Table 5-14 for purchased capacity, and each entity reimburses DMWW for the annual principal and interest payment. The annual principal and interest payment due in 2016 for each community is shown in Column 4. The unit cost per 1,000 gallons for debt service is determined by dividing the annual principal and interest payment in Column 4 by the projected billed usage for 2016, shown in Column 3. The resulting unit cost for debt service related to purchase capacity is shown in Column 5.

DMWW's purchase capacity rate will increase from $1.46 per 1,000 gallons to $1.53 per 1,000 gallons effective April 1, 2015; an increase of 4.8 percent. For comparison purposes, it is assumed that the rate will increase another 4.0 percent in 2016 to $1.59 per 1,000 gallons as shown in Column 7 of Table 5-14. The effective rate for the four entities identified in Table 5-14 is determined by adding the unit cost for debt service (Column 5) and the estimated 2016 purchased capacity rate (Column 7) and is shown in Column 8. The calculated current effective rate from Table 5-14 is generally lower than the potential effective rate for the Regional Production Utility shown in Table 5-10. When the low range portion of the valuation estimate is used in the financial analysis,

the resulting effective rate (Table 5-13, Line 4) is more comparable to the derived, current effective rate in Table 5-14.

Table 5-14 Effective Rate Comparison

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Line No.	Description	2016 Usage	2016 Annual P&I	P&I per 1,000 gal.	2015 Purch Cap Rate (a)	Estimated 2016 Purch Cap Rate	Estimated 2016 Effective Rate
		1,000 gal.		(4) / (3)		(6) x 104%	(5) + (7)
1	City of Ankeny	1,673,133	$939,828	$0.56	$1.53	$1.59	$2.15
2	City of Urbandale	1,588,958	$1,072,853	$0.68	$1.53	$1.59	$2.27
3	City of Waukee	428,728	$333,566	$0.78	$1.53	$1.59	$2.37
4	West Des Moines Water Works	739,937	$301,794	$0.41	$1.53	$1.59	$2.00
	Des Moines Water Works - Wholesale (a)						
5	Purchased Capacity				$1.53		
6	With Storage				$3.33		
7	Off Peak				$1.72		

(a) Effective April 1, 2015.

While the above comparison provides an indication of the current comparison, Black & Veatch recommends that each entity undertake its own separate analysis, as each entity is familiar with the costs it may have incurred to purchase capacity or contribute to DMWW over the years. In general, the estimated effective rate is not completely out of line with current effective rates paid by regional utilities.

It is also important to note that the effective rate under the potential Regional Production Utility of approximately $2.52 per 1,000 gal. is less than DMWW's current "With Storage" rate for wholesale customers. The "With Storage" rate includes the fully loaded, wholesale rate that recovers O&M, depreciation, and return on investment from wholesale customers.

5.3.1 Future Considerations

While the comparison of the effective rate under a Regional Production Utility compared to the current wholesale arrangement provides valuable information to see how current costs might change, it is also important to consider the value of potential changes to meeting future growth demands.

Under the current wholesale arrangement, a utility that needs additional capacity more than likely must obtain it from DMWW. Black & Veatch understands that DMWW will identify the cost of the necessary improvements to add to the capacity, and then pass that cost solely along to the utility that requires the capacity. This approach by DMWW is not uncommon and is done to protect existing customers being overly burdened on costs for additional capacity that may not benefit them.

One potential option could be for the Regional Production Utility to share in the overall costs for expanding the capacity of the system. The sharing of expansion costs under this option would be consistent with the net value approach outlined in this Report that brings participants into the Regional Production Utility on an equal basis (net value per mgd).

Table 5-15 provides a hypothetical example for consideration. In this example, it is assumed that an additional 20 mgd of capacity is required to serve 4 customers. The hypothetical project cost of this additional capacity is $60,000,000 and will be financed with a 30 year revenue bond with 4 percent interest. The annual principal and interest payment will be $3,470,000. Under the current organizational structure, the four communities allocate the annual principal and interest payment based on the allocation of the new capacity. Each community's cost of debt per 1,000 gallons is based on their share of the annual debt service allocated to their annual usage, which results in unit costs ranging from $0.35 per 1,000 gallons to $1.73, as shown in Table 5-15.

The alternative option reflects the sharing of system expansion costs of 20.0 mgd among all regional participants. As shown on Line 5, the unit cost of debt per 1,000 gallons is based on the annual debt service allocated to the total regional billed water usage and results in $0.20 per 1,000 gallons. The annual savings that each of the four communities would realize under the regional entity scenario ranges from $379,000 to $785,000.

Table 5-15 Future Expansion Example

LINE NO.	UTILITY	CAPACITY NEEDED (MGD)	ANNUAL PRINCIPAL AND INTEREST (1)	BILLED USAGE (1,000 GAL.)	COST PER 1,000 GAL.
CURRENT SITUATION					
1	Utility No. 1	5.0	$867,000	1,200,000	$0.72
2	Utility No. 2	5.0	$867,000	2,500,000	$0.35
3	Utility No. 3	5.0	$867,000	1,400,000	$0.62
4	Utility No. 4	5.0	$867,000	500,000	$1.73
POTENTIAL OPTION – REGIONAL PRODUCTION UTILITY					
5	Total Regional Utility	20.0	$3,470,000	17,557,917	$0.20

Existing utilities and/or communities that are customers of DMWW, and that are not anticipating growth may balk at the option of a regional water utility sharing expansion costs among all regional entities. However, these entities must consider the potential of growth communities pursuing their future water needs either individually, or as a group separate from DMWW. Over time, the loss of revenue from any customer that leaves DMWW could result in increases to customers that remain as fixed costs of the DMWW system are spread over a smaller bilked usage base.

5.3.2 Communities That Opt Out

Another question is related to the impact of this Study should one or more entities decide not to join the Regional Production Utility. With 14 different entities included in the Net Value analysis above, analyzing the multiple scenarios that could materialize is beyond the scope of this Study. There are however, several items to consider.

First, if the entity that opts out continues to receive its water from the Regional Production Utility, the impact to the effective rate in Table 5-10 would likely be negligible. This is because the projected costs of the Regional Production Utility would be spread over the billed usage which would include the entity that opts out.

Second, if the entity that opts out decides to purchase or produce water separate from the Regional Production Utility, then the potential impact to the effective rate in Table 5-10 would be negative. This is particularly the case if the entity is a larger user of water. The billed usage deducted from the total regional billed usage would result in a higher effective rate for the Regional Production Utility.

Finally, if one or more entities decide to opt out, then the percentage of adjusted net value (see Table 5-4) would change. Each of the entities that join the Regional Production Utility would receive a larger share of net value, or equity in the organization.

5.4 FINANCIAL ANALYSIS CONCLUSION

For purposes of this Study, Black & Veatch determined an estimated range of value for the assets that could be transferred to a new Regional Production Utility. Should CIRDWC members decide to move forward with forming the Regional Production Utility, the range of value estimate provides a basis for consideration and negotiation.

The Net Value analysis also provides a method for bringing regional participants into the Regional Production Utility on an equal basis. It is achieved by assessing the net value that each entity brings to the table, and then adjusting each entity to the same net value per mgd of capacity using contributions and a cash payment to DMWW. Because each participant comes into the endeavor on an equal basis, a uniform rate is possible, along with the sharing of both ongoing maintenance costs and expansion of the system.

Black & Veatch also developed a projection of revenue requirements for the first five years of the Regional Production Utility. This resulted in an estimated effective rate of $2.52 per 1,000 gallons. This effective rate appears to be higher than the current effective rates for WDMWW, Urbandale Water Works, Ankeny, and Waukee by about 6.0 percent to 26.0 percent. However, this higher cost provides entities with participation in the governance of the Regional Production Utility. It should also be evaluated in the context of how each entity will finance future improvements for additional water supply.

6 Governance

6.1 POTENTIAL INITIATING PRINCIPLES

During the first phase of this Study, CIRDWC members provided feedback to Black & Veatch with respect to their reasons for potentially creating a Regional Production Utility, as well as potential concerns that might arise from creating and joining a Regional Production Utility. Based on feedback from the stakeholder input and SWOT Analysis mentioned above, the following sections outline potential initiating principles that participants could include in a founding document for the Regional Production Utility. The purpose of these principles would be to provide an organizational framework for oversight of the Regional Production Utility and allow for the regional growth and expansion of the water system.

- Future Source of Supply – Members would need to agree to be restricted from independently developing their own source of supply, unless approved by the Regional Production Utility. This principle balances the regional need for water to support growing communities with a concern that communities acting independently on source of supply issues could create an inefficient regional system for water delivery. For example, if a current wholesale customer of DMWW develops its own source of supply and leaves DMWW as a customer, the current DMWW core network could operate in an under-utilized manner. This would leave fixed costs for the core network to be largely born by customers that do not utilize a significant portion of the core network.
- Future Purchase of Finished Water – Members would need to agree to purchase all future, finished water from the Regional Production Utility. This principle balances the need to develop a Regional Production Utility that is dedicated to serving the region, with the potential negative impact that could arise if members of the Regional Production Utility develop their own source of supplies, or enter into separate agreements for water from other entities. An advantage of having total commitment from all members is that existing and future costs of the core network would be covered by a growing based of billed usage and/or customers.
- Water Quality – Members would need to agree to support the approved initiatives of the Regional Production Utility related to source and finished water quality. During the stakeholder input and SWOT Analysis, CIRDWC members indicated that source water and finished water quality was important to them. This principle states that participants in the Regional Production Utility would commit to approved initiatives designed to improve both source and finished water quality.
- System Planning and Expansion – Members would need to agree to participate in regional water system planning to benefit the entire region. This principle promotes the efficient planning of the core network system. This principle would balance the desire of growing communities to develop a system that meets future demand, with the desire of non-growth communities to conduct responsible planning that expands the regional water system efficiently.
- Outstanding Debt – Members would need to agree that all debt related to their individual systems or previous relationship with DMWW remain separate from the Regional Production Utility. This principle protects the Regional Production Utility from any negative financial impacts of debt related to the potential members. This does not include the outstanding debt currently held by DMWW for the core network and/or purchased capacity financed for wholesale customers. As

described in the Financial Analysis section of this Report, that debt could be paid off by the Regional Production Utility, or retired in another acceptable manner. Future legal and financial advice would need to be undertaken to determine the best manner for addressing that debt.

- Rates and Charges - Members would need to agree to establish sufficient rates and charges that support and maintain the existing core network, as well as expand the core network to meet future regional demand. This principle would require that future rates and charges will provide capital for operating and maintaining the current core network system, as well as expanding the regional system to meet future demand.

6.2 KEY GOVERNANCE ISSUES

6.2.1 Voting Rights

An underlying purpose for this Study was the desire of regional communities to have a voice in the planning and provision of water to the region. This includes planning to address source of supply issues and future demands, as well as the establishment of rates and charges. During the stakeholder input portion of the Study, CIRDWC members were asked their opinion with respect to how they viewed governance and voting rights. Most of the CIRDWC members responded that a weighting of voting rights to reflect the relative size of regional communities appeared appropriate.

The Net Value analysis portion of the Study provides a mechanism where each of the participants would be able to participate in the Regional Production Utility on the same basis in terms of the net value per mgd of capacity needed from the Regional Production Utility. By bringing the same net value per mgd to the Regional Production Utility, Black & Veatch believes this provides participants with the ability to establish voting rights in several different ways.

The first example that could be acceptable weights a participant's vote on the basis of the net value contributed to the Regional Production Utility. The net value reflects the results of Table 5-4 above, where the net value contributed by participants equals their percentage of the system total capacity. The following Table reflects a hypothetical example of a weighted vote based on the net value contributed by participants. As can be seen, an issue brought before the Regional Production Utility for consideration would be voted on by one member for each participant. Each vote would be weighted based on the percentage of net value contributed by each participant to the Regional Production Utility. In this hypothetical example, "yes" votes for four participants compared to "no" votes for 10 participants, results in overall approval of the hypothetical measure.

Table 6-1 Hypothetical Weighted Vote Based on % of Net Value

Line No.	Description	(1) % Net Value	(2) Factor	(3) YES	(4) NO	(5) YES	(6) NO
						=(1)x(2)x(3)	=(1)x(2)x(4)
1	Des Moines Water Works	44.63%	100	1		44.63	0
2	Polk Co. (SE and Unincorporated)	1.45%	100	1		1.45	0
3	Berwick Water Association	0.19%	100		1	0	0.19
4	Urbandale Water Works	11.41%	100		1	0	11.41
5	West Des Moines Water Works	14.07%	100		1	0	14.07
6	Ankeny	9.40%	100	1		9.4	0
7	Clive	5.20%	100	1		5.2	0
8	Waukee	2.75%	100		1	0	2.75
9	Warren Rural Water	2.42%	100		1	0	2.42
10	Xenia Rural Water	2.20%	100		1	0	2.2
11	Norwalk	1.47%	100		1	0	1.47
12	Bondurant	0.90%	100		1	0	0.9
13	Altoona	3.65%	100		1	0	3.65
14	Polk City	0.26%	100		1	0	0.26
15	Total	100.00%		4	10	60.68	39.32

6.2.1.1 Other Voting Rights Options

The use of net value per mgd is one option for establishing voting rights for members of the Regional Production Utility. Another option would be to weight the vote using the population numbers for each participant. This would be similar to the methodology used by WRA, which assigns an additional representative to members for each population increment of 25,000 persons. With respect to the Regional Production Utility, the use of population increments could be used, or determining the total population of participants and using the resulting weighted percentage could be another alternative.

6.2.2 Board Makeup

During the stakeholder input and SWOT analysis, a re-occurring theme from CIRDWC members was their desire to have representation with respect to governance issues, including establishment of rates and charges and system planning. This will require a large Board that will need to accommodate varying viewpoints on governance and regional water issues. CIRDWC members did state that the large WRA Board functions effectively.

An effective board makeup would include members who are appointed by the governing bodies of their respective communities. The appointment of board members is preferable to a board that is made up of directly elected members. Based on our discussions with other regional water entities across the U.S., board members that are directly elected to their position provides an additional layer of water politics that can interfere with an effective decision-making process. This can also result in the politicization of regional water issues and a breakdown of cooperation between communities. The alternative of governing through appointed members retains accountability of governing members to their respective communities, while allowing appointed members to work on regional water issues in a less political environment.

A professional staff would likely be necessary to assist the Board in the day to day operation of the Regional Production Utility. Staff would include a General Manager or Executive, Financial Officer, Chief Engineer, Human Resource Manager, and Legal Manager. Based on feedback from CIRDWC members and Black & Veatch's experience, important committees would likely include:

- Executive Committee – This would be important for a large board contemplated for the Des Moines region. The Executive Committee provides guidance and feedback to the professional staff as necessary and may consist of approximately three members. Typically, the Executive Committee would include a Chair, Vice Chair, and Secretary. The Executive Committee would be nominated and appointed by the board at the beginning of each year.
- Planning/Technical Committee – This would be an important committee that plans for the future expansion of the regional water system, as well as planning for traditional projects such as capital maintenance and water quality enhancement.
- Finance Committee – This would be important for managing the overall finances of the Regional Production Utility, as well as the establishment of rates and charges.

6.2.2.1 Staff

During the stakeholder input portion of the Study, several CIRDWC members noted that WRA contracts out operation of the wastewater system to the City of Des Moines. Black & Veatch realizes that contracting out all or some of the operations of the Regional Production Utility to another entity could be an option. Nevertheless, it is also likely that the Regional Production Utility would want to have a professional staff to handle management and policy issues related to the utility. In general, the professional staff would typically consist of the following positions:

- Chief Executive or General Manager – The Chief Executive or General Manager would be responsible for the overall operation and management of the Regional Production Utility. This includes responsibilities such as oversight of operations to ensure water is produced in sufficient quantities and of a quality necessary for the region; planning to ensure the ability of the Regional Production Utility to meet future demand; financial management; and development and implementation of Board policies and procedures. The Chief Executive or General Manager would also retain the authority to sign and execute legal documents on behalf of the Regional Production Utility.
- Chief Engineer – The Chief Engineer would oversee the planning and construction of any improvements and would lead the development of regional planning to ensure the water system meets the needs of the region and utility participants. The Chief Engineer would work with the Board Technical Committee to derive an overall plan for expanding the regional water system to meet future demand, as well as performing the appropriate asset management to ensure the existing system is in good working order.
- Chief Financial Officer – The Chief Financial Officer would oversee all financial affairs of the organization. This position would lead the development of the annual budget and audit processes, as well as the development of annual rates and charges to be assessed by the Regional Production Utility. The Chief Financial Officer would work closely with the Board Finance Committee to develop appropriate policies and procedures for maintaining appropriate financial controls with respect to the various funds maintained by the Regional Production Utility.

- Human Resources Manager – A Human Resources manager would be required if the Regional Production Utility inherits or hires employees that run the day to day operations of the utility. This manager would oversee hiring practices, training, discipline issues, and other personnel-related issues. The Human Resources manager would work with the Chief Financial Officer on employee benefit issues such as annual pay, benefits, and retirement planning issues. If the Regional Production Utility were hire a contract operator, the Human Resources Manager might not be required. Alternatively, it is feasible to outsource Human Resource functions.
- Legal – A Legal manager or General Counsel would provide the Board and staff with legal direction on utility issues. Additionally, this manager could oversee risk management issues

6.3 GOVERNANCE ALTERNATIVES

6.3.1 Traditional Municipal Governance

The first alternative evaluated by Black & Veatch consists of a traditional municipal utility governance model on a regional basis. During the stakeholder input phase of this Study, CIRDWC members generally indicated that the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) was successful model for regional governance. Black & Veatch reviewed the Amended and Restated Agreement for the Des Moines Metropolitan Wastewater Reclamation Authority that originated in 2004. The Agreement includes provisions that outline issues such as 1) voting rights; 2) organization and powers of the board; 3) acquisition and transfer of wastewater assets; 4) construction of future improvements; 5) operation and maintenance of the wastewater system; and 5) financial issues such as budgeting, audits, and issuance of bonds. In general, the Agreement provides a good example of components that would need to be addressed should CIRDWC members determine to move forward with creating a Regional Production Utility.

There are several other, similar examples that have been created across the U.S., albeit with variations in the number of members, how they are elected or appointed, or other governance matters. The traditional municipal governance model consists of board members that are elected or appointed by the communities they represent, and that exercise their authority under state statutes to provide a public need. In this case, the provision of drinking water on a regional basis to the communities that comprise the Greater Des Moines region. It should be noted that this Study does not include a legal analysis of forming a regional water utility, or a legal analysis as to the appropriate responsibilities of a regional water utility. That analysis will need to be undertaken by CIRDWC on a separate basis from this Study.

There are several examples of communities across the U.S. that have come together to address water needs on a regional basis. The following provides a brief description of several utilities that use traditional municipal governance:

- Central Arizona Project – The Central Arizona Project (CAP) is a multi-county municipal corporation governed by members representing Maricopa, Pima, and Pinal counties. The CAP provides approximately 1.5 million acre-feet of water per year to central Arizona. The CAP consists of a secure, open-air water canal that originates at Lake Havasu and stretches approximately 336 miles to the City of Tucson. The raw water is supplied for municipal, agricultural, and tribal use. The mission of the CAP is to be the steward of central Arizona's Colorado River water entitlement and a collaborative leader in Arizona's water community.

Governance is conducted by a 15-member Board of Directors that are popularly elected from Maricopa, Pima, and Pinal counties. Board members serve staggered six year terms. The number of Board members is generally based on the populations of the counties represented. There are 10 members from Maricopa County; four from Pima County; and one from Pinal County. Key powers include the responsibility for managing the business of CAP, executing all necessary contracts and instruments for the CAP, employing the staff that manage and operate CAP, receiving and investing monies for CAP, and establishing revenue bonding program. Established Board committees consist of an Executive Committee, Central Arizona Groundwater Replenishment District Committee, Finance and Audit Committee, and Public Policy Committee.

The Board manages the day to day operations of CAP with a General Manager associated staff totaling approximately 400 employees.

- Tampa Bay Water – Tampa Bay Water (TBW) is a regional water supply entity that provides wholesale drinking water to the Florida communities of Hillsborough County, Pasco County, Pinellas County, New Port Richey, St. Petersburg and Tampa. The population of this region is approximately 2.3 million. The mission of TBW is to reliably provide clean, safe water to the Tampa Bay region now and for future generations. To meet the needs of the region, TBW derives raw water from groundwater, surface water, and seawater sources. The majority of supply is supplied from well fields, but is supplemented from water treated at surface water and desalination treatment plants. The history of TBW dates back to the mid-1990s when the communities of the region decided to form TBW to cooperate regionally on water supply and planning issues.

  Governance is conducted by a nine member Board of Directors consisting of elected persons appointed by their respective communities. There are two members representing Hillsborough County; two members representing Pinellas County; two members representing Pasco County; one member representing the City of Tampa; one member representing the City of St. Petersburg; and one member representing the City of New Port Richey. Each Board member has one vote and approval of actions before the Board requires six votes out of nine.

  TBW has an Interlocal agreement that outlines the duties and responsibilities of TBW and the Board. Of significant note is the emphasis on water master planning, and exclusivity provisions recognizing TBW as the primary supplier of regional drinking water. There are currently 125 full time employees with a General Manager that oversees the day to day operations on behalf of the Board.

The two organizations above were created to address water supply issues or other regional issues that are unique to their own respective regions. In the instance of the CAP, the regional entity was formed to manage the operation of a federally constructed project to ensure sufficient water supply to regional stakeholders. TBW was formed to coordinate the management of water supply and treatment service to several regional stakeholders. Both have developed their unique governance structures, but commonalities include boards that develop policies and provide oversight to ensure management of water issues on a regional basis. In Black & Veatch's opinion, a similar governance structure could be created to address regional water supply, treatment, and transmission issues for the Greater Des Moines region.

6.3.2 Modification of Current Governance Arrangement

Under the current arrangement, DMWW controls the production and transmission of drinking water to the Greater Des Moines region. This includes conducting the planning and setting rates and charges to fund capital investment and O&M. One potential alternative would be to grant regional communities greater input into future regional planning and rate setting decisions. One mechanism for achieving this would be to re-negotiate existing purchased capacity agreements to add provisions related to governance of the regional utility. The following provides several aspects that could be addressed in a re-negotiated purchased capacity agreement.

- Financial Planning and Rate Considerations – A consistent theme from CIRDWC members that receive service from DMWW was that the rate setting process was difficult to understand. There was discussion about the difficulty of understanding DMWW's rate process, as well as the planning and notification process for establishing rates from year to year. This could be one area that purchased capacity customers re-negotiate as part of their existing Wholesale Service Master Agreement. Potential items to include would have to be negotiated, however, negotiation points could include:
  - Establishing a financial planning and rate setting committee that consists of both full service customers of DMWW and customers with purchased capacity agreements. While the committee would not have final say in the determination of rates, it could serve as a venue for customers to provide input to DMWW, understand how costs are allocated, and rates determined.
  - Cost of Service Determination – The current cost of service and rate process is conducted in house. A potential solution to derive more confidence from DMWW customers would be to jointly hire a consulting firm to perform a cost of service study to derive the allocation of costs to DMWW customers.
  - Rate Process – This could include a more detailed description that could be included in agreements that outlines the cost of service and rate process. The rate process could include a description of costs that would be included in purchased capacity rates, etc. There could be a detailed example of the cost allocation process included in the agreements for future understanding. The goal would be to establish an upfront understanding of how cost of service and rates are established.
- Water System Planning – Communication on water system planning appears to primarily occur between DMWW and individual communities. One way to expand this to a more regional basis would be to create a technical or planning advisory committee to assist DMWW with understanding water needs on both an individual community and regional basis. This committee could also focus on tracking and meeting regularly to discuss peak day and peak hour demands, as well as strategies to meet future demands. Additional topics could include source water quality and finished water quality to represent these issues from a more regional basis.
- Other – The items above are just some examples of issues that could be re-negotiated between DMWW and its Wholesale Master Service Agreement customers. Other important items could additionally be added, however, they should generally reflect issues that further greater regional cooperation.

In terms of governance, the modification of the current governance arrangement will still leave the DMWW Board of Directors with a final say in matters important to regional communities and utilities. The success of this alternative would be dependent on the ability of DMWW and the regional communities to work together collaboratively to build trust and further regional cooperation.

6.3.3 Public Private Partnership

Public Private Partnerships (PPPs) within the water industry represent cooperation between municipal and private entities in the area of public water supply. In general, the use of PPPs for major U.S. water systems has been limited, however, there are several examples where major municipalities utilize private entities in some form to assist with providing water or wastewater service to customers. Several examples include:

- City of Buffalo, New York –Buffalo Water utilizes Veolia Water North America to operate and maintain its water supply and distribution system. Buffalo Water retains rate setting responsibility and overall ownership of the water assets.
- Indianapolis, IN – In the early 2000s, the City of Indianapolis utilized PPPs in several instances to assist with the provision of water and wastewater service. In approximately 2001, the Department of Waterworks contracted with Veolia Water North America to operate and maintain the water system assets, including supply, treatment, transmission, and distribution assets. The Board of Waterworks maintained ownership of the assets, as well as responsibility for development of policies and strategic direction of the utility. The City of Indianapolis contracted with United Water to operate and maintain the wastewater system. This included the lift stations, collection system, and treatment plants owned by the City. As with the water system, the City maintained ownership of the wastewater assets. In 2011, both the water and wastewater assets were purchased by Citizens Energy Group, a local energy utility. Citizens Energy Group no longer uses Veolia to operate and maintain the water system, but does utilize United Water to operate and maintain the wastewater system.

There are several other examples where PPPs are utilized by municipalities for water and wastewater service to customers. In general, PPPs can be used to focus on areas where municipalities may lack experience or to achieve cost savings in water or wastewater service. With respect to regional water service for the Greater Des Moines region, CIRDWC members did not indicate that they viewed a PPP as a potential solution. However, Black & Veatch has included this alternative in this Study as means of considering alternative governance options.

There are several potential options for a PPP. The following is provided as a reasonable example; however, there may be other more preferable PPP arrangements that would have to be investigated if CIRDWC believes this to be a potential alternative.

- Long Term Lease – Under a long term lease arrangement, the current owner of the core network would likely receive an upfront payment. In exchange, the private entity would manage, operate, and maintain the system under a lease agreement. The lease agreement would have to be negotiated to reflect key provisions desired by regional participants, including items such as water quality expectations, rates and charges, sharing of cost savings, and other important items. The private entity would provide key governance roles for the utility during the term of the lease.

This includes setting policies and procedures, establishing rates and charges, and other policy-related items. It is typical within other states for a state regulatory body to oversee rates and charges for investor-owned utilities. Consideration of how rates and charges would be implemented would be a key component of the lease agreement. Consideration would also need to be given to what role the Iowa Utilities Board would play, if any.

The potential benefits of this arrangement include potential O&M cost savings. These cost savings could be shared between the private entity and the ratepayers. Other non-cost benefits could include governance and decision-making from an unbiased perspective. In theory, a private entity would make regional water decisions with less concern for individual community needs. Capital investment, both for upkeep of the existing system and expansion to meet future demand, would be made to derive an efficient regional system. Finally, a lease arrangement has an expiration date, albeit longer term, for ending the lease should customers be unhappy.

The potential drawbacks of this arrangement are evident in that regional communities would have limited say in the governance of the regional provision of water. The desire for having a say in the governance of a Regional Production Utility was a key reason for CIRDWC implementing this Study. Additionally, implementation of capital projects is typically more expensive for private or investor-owned utilities. Municipal utilities have the ability to issue tax-exempt debt and can issue revenue bonds at competitive interest rates. Private or investor-owned entities generally cannot issue tax-exempt debt and require a higher rate of return on investment for their owners or shareholders.

- Other Modifications – As indicated above, there are other PPP alternatives that CIRDWC could explore. As a key drawback to the long term system lease was the lack of governance for regional communities, a modification to the lease arrangement would be to allow some form of governance by regional communities. This could include providing oversight on key items such as rates and charges, system planning, water quality, and other items. This governance modification and the interaction with the private or investor-owned entity would have to be carefully considered and documented to ensure success both for the regional communities and for the private or investor-owned entity.

7 Next Steps

The completion of this Study is CIRDWC's first step toward evaluating whether to form a Regional Production Utility. This Study has provided valuable information, including an estimate of value of assets that could be transferred, a projected five year schedule of revenue requirements, and an estimated effective rate for comparing to the current cost of water from DMWW. Additionally, CIRDWC members evaluated the strengths, weaknesses, opportunities, and threats of the current method for providing water, versus the regional alternative. The next steps must continue to drive CIRDWC members closer to ultimately determining whether to form the Regional Production Utility. The following sections include both short and longer term tasks to continue moving toward a final determination.

7.1.1 Short Term

With respect to this Study, there are several issues that should be considered further by CIRDWC members. This further consideration can be completed in the short term, which is approximately 4 to 6 months after the completion of this Study. One method for considering issues would be to form sub-committees to more efficiently review elements of this Study and future issues to be resolved. The goal of each sub-committee would be to consider elements of this Study, assess whether any deal breakers exist; assess whether there are better options for creating a Regional Production Utility; and develop conclusions and recommendations that can be presented to the full CIRDWC board. The following are some items that CIRDWC members may want to consider further:

- Financial – The financial review would consist of reviewing the estimated valuation for this Study, as well as the Net Value analysis and derivation of the effective for the Regional Production Utility. A higher or lower valuation estimate impacts the cash payment to DMWW as well as contributions to and from individual entities. Questions to consider include: Does the valuation estimate appear reasonable? If not, what is a better estimate? Does the Net Value analysis appear effective for bringing regional participants into the utility on an equal basis? How should outstanding debt held by DMWW be handled? Can the cash payment to DMWW be reduced? Is the resulting effective rate a non-starter compared to the existing rate?

  The answers to these questions can vary, however, by discussing these issues among CIRDWC members, greater clarity and a common understanding across CIRDWC can develop.

- Technical – The technical review would consist of focusing on the technical aspects of the Regional Production Utility. Questions to be considered could include: Should any other regional assets be included in the Study? Should any of the regional assets included in the Study be excluded? How would operations be performed? How would the Regional Production Utility be managed?

- Governance – The governance review could focus on questions such as: Should board members be elected or appointed? What committees should be established? How would voting rights be weighted? What would be general duties and responsibilities of board? How would new members join?

The above provide just some examples of areas that sub-committees could consider. Once these issues have been addressed in sub-committee, a consolidated set of conclusions and findings can be developed by the full CIRDWC board. At this point, conclusions and findings can be discussed with

political and utility governing bodies to obtain additional input and feedback. CIRDWC can then determine whether to continue moving forward in the process.

7.1.2 Long Term

For purposes of this Report, long term reflects an additional period beyond the 4 to 6 month short term period mentioned above. This could last an additional six months or longer beyond the short term period and is only necessary if CIRDWC determines to continue moving forward.

7.1.2.1 Additional Due Diligence

At this point, it is envisioned that further due diligence would be needed, including legal and financial analysis of how the Regional Production Utility would be formed, transfer of assets, establishing financial statements, staff and management planning, and other important matters. Technical due diligence could also be done to focus in on developing initial plans for maintaining the core network and proceeding with the initial expansion, including potential projects and timing.

Additionally, CIRDWC may want to begin drafting a memorandum of understanding that would form the basis of a regional agreement. Important components would likely include initiating principles, board makeup and responsibilities, sharing of costs, and other areas important to potential participants. This additional due diligence, plus a draft memorandum of understanding can then be presented to the full CIRDWC board for consideration.

7.1.2.2 Public Input

Should the board determine to move forward, it would likely then be appropriate to begin public hearings. The public hearings could be held in each community to present the merits of a Regional Production Utility compared to the current arrangement. This will allow the public to consider the impact of deal, and provide input to the ultimate decision-makers.

Appendix A

Central Iowa Regional Drinking Water Commission

QUESTIONNAIRE FOR FEASIBILITY OF REGIONAL WATER PRODUCTION ENTITY

1. Entity Characteristics

a. Name of Entity to be Interviewed

b. Interview Participants w/ Titles

c. Current and General System Configuration / Service

- Source of supply
- Treatment
- Transmission
- Distribution system
- Customer Care

d. Number of Accounts / Customers

- Types – Residential / Commercial / Industrial

e. What current system assets do you own or have ownership in?

- What value would you place on your assets?
- How did you determine that value?

f. Average Annual Water Usage

g. Peak Usage

- How do you measure?
- How do you meet requirements?

h. Number of Employees

- Management
- Operations
- Administrative / Support

i. Estimated Annual Budget

- Operating
- Capital

2. Entity Strategy

a. Do you have a strategic plan?

b. Do you coordinate with local chamber / economic development / Council / Commission?

c. What is your anticipated system growth?, i.e., annual percentage growth rate of new customers.

d. In your opinion, does the current regional water situation hinder or promote economic development in the region?

e. Do new customers pay an up-front capital charge for joining the system?

f. Do you have adequate supply for anticipated growth?

g. How do you plan on addressing increased water demand?

h. How would you classify the quantity and quality of your water?

3. Regionalization

a. What are three items that your entity sees would be beneficial from a potential regional production authority?

b. What are three items that you fear from a potential regional production authority?

c. What would be the "best" scenario for the region?

d. Do you have concerns about the impact of a regional water production entity on your current staff?

4. Governance

a. What is your general concept of what the governance structure of a new regional water production entity should be?

b. How important is it for your entity to have a role in the day-to-day governance of a new regional water production entity?

c. With respect to a new Board that oversees a potential regional production entity, what is your opinion of the ideal composition?

- Number of Members
- Geographical Representation
- Professional Background

d. In your opinion, what should be the key focus or responsibilities of the Board?

- e.g., Planning, Finance, Budget, Operations, Policy

e. In your opinion, how frequently should the Board of a potential regional production entity meet?, e.g., monthly, bimonthly, quarterly

5. Water Supply

a. In your opinion, how stable is the regional water supply?

b. Does your entity have a significant source of supply that could contribute to the potential regional production entity?

c. Does your entity foresee significant population and/or economic growth in the coming years?

d. Where is your current supply derived from?

e. Do you have a contract for water supply? if so, who is the contract with?

f. What are the pros and cons of the current water supply situation?

g. How can a potential regional production authority alleviate or improve the current situation?

6. Financial and Rate Stability

a. What is the rate that your entity pays currently for water?

b. Who establishes the rate paid by your entity?

c. In your opinion, does the current rate provide your community with good value?

d. In your opinion, how should new production and water supply projects be funded?

e. What is your opinion with respect to transferring community water production assets to a new regional water production entity?

7. Public / Stakeholder Input

a. How aware are your citizens / customers of current water situation?

- Do they know what your source of supply is?
- Do they understand your cost structure?

b. In your opinion, what would be the general reaction of your community's citizens to the formation of a new regional water production entity?, e.g., positive, negative, indifferent?

c. In your opinion, what are key, public engagement components that would be necessary leading to the formation of a regional production authority?

d. What is the general political process that your community would be required to undertake to approve the formation of a regional production entity?

e. Is your community conservation-minded?

f. Do you share any services with your neighboring communities?

- Police / Fire / Parks / School / Library / Public Works

8. Open Discussion / Topics

Appendix B

BUILDING A WORLD OF DIFFERENCE

12 September 2014

SWOT ANALYSIS FOR THE FEASIBILITY OF A REGIONAL WATER PRODUCTION ENTITY

CENTRAL IOWA REGIONAL DRINKING WATER COMMISSION

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AGENDA

Definition

Process

Expected Outcomes

WHAT IS A SWOT ANALYSIS

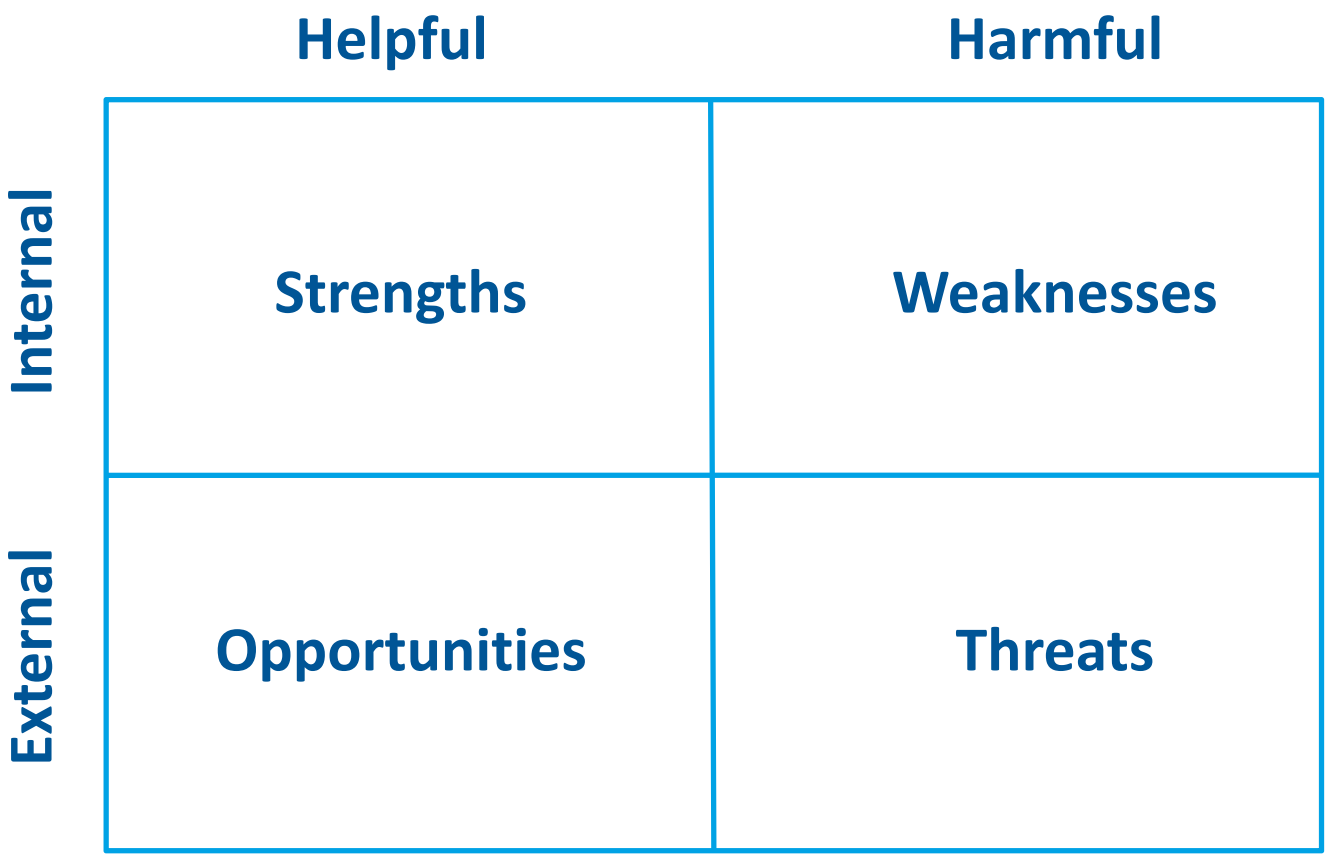
DEFINITION OF SWOT

DEFINE SWOT

- **A SWOT analysis is a structured planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or in a business venture**
  - The feasibility of creating a regional water production entity is the project or business venture
  - Todays' exercise will provide the structure to allow all participants to voice their thoughts, opinions and concerns
- **The analysis involves identifying the internal and external factors that are favorable and unfavorable to achieve the objective of the business venture or project**
  - The objective is to provide sustainable water supply to meet the strategic needs of the Greater Des Moines area

DEFINITION OF SWOT

SWOT MATRIX



DEFINITION OF SWOT

SWOT MATRIX

- **Strengths**
  - **Internal** characteristics or issues that give the project or business venture **advantage** over others
- **Weaknesses**
  - **Internal** characteristics or issues that place the project or business venture at a **disadvantage**
- **Opportunities**
  - **External** characteristics or issues that give the project or business venture **advantage** over others
- **Threats**
  - **External** characteristics or issues that place the project or business venture at a **disadvantage**

DEFINITION OF SWOT

BEHAVIORS

- **Constructive**
  - Cooperative
  - Clarifying
  - Inspiring
  - Harmonizing
  - Risk Taking
  - Process Checking
- **Destructive**
  - Dominating
  - Rushing
  - Withdrawing
  - Discounting
  - Digressing
  - Blocking

Keep an open mind and positive attitude

WORKSHOP PROCESS

ELEMENTS

- Schedule
- Teams
- Procedure

WORKSHOP PROCESS

SCHEDULE

- **9:00 – 4:00**
- **2 Breaks**
  - Networking
  - Phone calls / emails / texting / facebook
  - Please return promptly
- **Lunch hour**
- **3:00 – Summary**
  - Combine small group analysis
  - Prioritize

Agenda

9:00 am – 4:00 pm

9:00 – Presentation of Feedback from one-on-one interviews

9:30 – SWOT Analysis Briefing

- Process
- Expected Outcomes

10:00 – Break

10:30 – SWOT – Analysis of continuation of current situation

10:50 – strengths

11:10 – weaknesses

11:30 – opportunities

11:50 – threats

12:00 – Lunch

1:00 – SWOT – Analysis of Regional Production Entity

1:00 – strengths

1:20 – weaknesses

1:40 – opportunities

2:00 – threats

2:30 – Break

3:00 – summary – findings of the two analyses are combined and outcomes are prioritized

3:30 – 3:45 – Workshop concludes

WORKSHOP PROCESS

SCHEDULE

- **SWOT Analysis**
  - 2 small-group sessions
    - Morning – Current Situation
    - Afternoon – Regional Entity
  - Each session budgeted 1 hour 20 minutes for activity
    - Aim for approximately 20 minutes per matrix component
  - **5 – 10 ideas, concepts, issues characteristics for each element of the SWOT matrix for each option**
- **Summary**
  - Full group activity - **Participation and input from all members**
  - Combine and analyze the findings of the two sessions

WORKSHOP PROCESS

TEAMS

- **4 Teams Designated**
  - Diversified Groups
- **Optimal group size is 8 – 9 participants**
- **Ground Rules**
  - Everyone turn off your cell phones
  - We begin/end on time
  - Information shared in the room stays in the room
- **Activities**
  - Determine critical issues
  - Write responses for each of the 4 four boxes
  - Be prepared to discuss with the larger group

PROCEDURES

- **Questions as thought starters:**
  - Internal Strengths: What skills, services and resources distinguish us?
  - Internal Weaknesses: What do our customers think we could do better? Where could we be more efficient?
  - External Opportunities: What influences, partnerships and resources could be tapped to help us move forward?
  - External Threats: What forces, trends, technology changes, governmental policy, and social patterns could limit our ability to meet our goals?

EXPECTED OUTCOMES

COMBINED GROUP

- Expected Outcomes for Current Situation vs. Regional Production Entity
- Identify common themes which create a platform to move forward
- Identify common themes which create significant barriers or incentives to move forward

EXPECTED OUTCOMES

GOING FORWARD

- What critical action items need to be addressed in order to move forward?
- What happens if we do nothing to address these issues? Is this acceptable?
- If change can be achieved, what are the positive outcomes that result?

QUESTIONS?

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12 September 2014

INTERVIEW FEEDBACK
FEASIBILITY OF A REGIONAL WATER PRODUCTION ENTITY

CENTRAL IOWA REGIONAL DRINKING WATER COMMISSION

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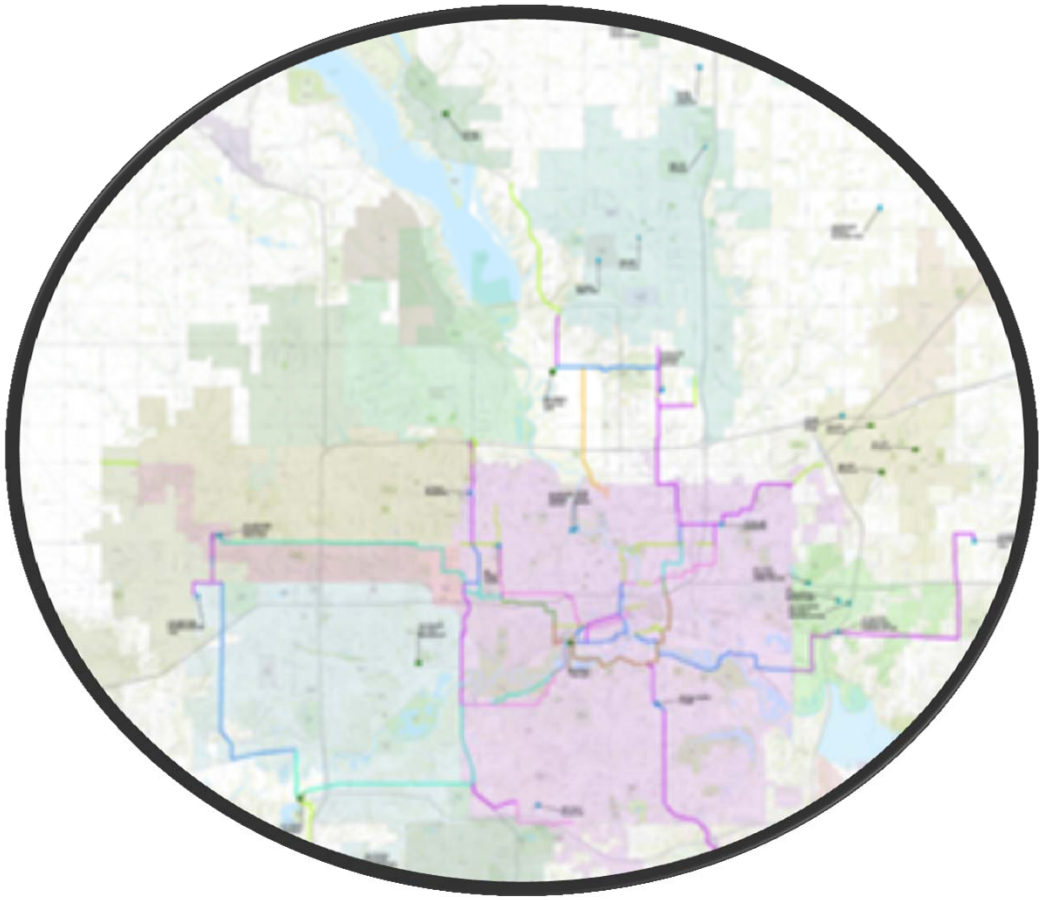
ACTIVITIES

- **Weeks of July 14th and July 21st one-on-one interviews were conducted with participating entities**
- **Interviews lasted 1 – 2 hours**
  - Formal questions
  - Open time for discussion
- **Data Collected**
  - Hard data on community specifics
  - Opinions and concerns about current situation and impact of regional entity
- **Purpose**
  - Provide information for the SWOT Analysis

PARTICIPANTS



- Altoona
- Ankeny
- Bondurant
- Clive
- Cumming
- Des Moines
- Johnston
- Norwalk
- Pleasant Hill
- Polk City
- Polk County
- Urbandale
- Warren County
- Waukee
- West Des Moines
- Windsor Heights
- Xenia

GENERAL THEMES

- Governance
- Transparency
- Capacity

GOVERNANCE

- **Themes**
  - Proportionate representation
  - Future “say in water issues”
- **Issues to consider during SWOT**
  - Is Des Moines Wastewater governance model appropriate?
    - Size and representation
  - Would level of representation change over time? If so, how?

TRANSPARENCY

- **Themes**
  - Cost of Service and Rate Study
    - Development of volume charge
  - Capacity Buy in
    - Capacity Projects vs. Internal DMWW Projects
  - Operations
- **Issues to consider during SWOT**
  - How can the current cost of service and rate process be improved?

CAPACITY

- **Themes**
  - Adequate capacity for future needs
    - Sustainable Growth
  - Quality
    - Finished vs. Source
- **Issues to consider during SWOT**
  - What is the best structure for addressing future quantity and quality needs?

SWOT TEAMS

Team A	Team B	Team C	Team D
Facilitator: Mike Borchers	Facilitator: Anna White	Facilitator: Heath Picken	Facilitator: Peggy Howe
▪ Jeff Walters	▪ Tim Hoskins	▪ E.J. Giovannetti	▪ Dan Lovett
▪ Karen Novak-Swalwell	▪ Dale Acheson	▪ Diana Wilson	▪ Tom Hadden
▪ Mark Lindeman	▪ Skip Cronkling	▪ Karen Oppelt	▪ Shane Kinsey
▪ Graham Gillette	▪ Mike Schultze	▪ John McCune	▪ Mark Wandro
▪ Casey Harvey	▪ Pat Collison	▪ Rachel Swisher	▪ John Gibson
▪ Merrill Heemstra	▪ Randy Beavers	▪ Gary Benjamin	▪ Ken Plager
▪ Betty Glover	▪ Jason Van Essen	▪ Len Murray	▪ Bill Stowe
▪ Bart Weller	▪ Amy Kahler	▪ Jaki Livingston	▪ Madeline Sturms
▪ Jim McKenna	▪ Jean Lare	▪	▪ Scott Cirksena

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12 September 2014

SWOT SUMMARY

CENTRAL IOWA REGIONAL DRINKING WATER COMMISSION

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STRENGTHS

Current

- Staff Responsible and Knowledgeable
- Reliability of finished water
- Currently finished water quality is good
- Redundancy
- Multiple sources of supply
- Ability of customer communities to make independent decisions
- Opportunity to choose level of service
- Knowledge of defined capacity limits for each community

Regional Production Entity

- More equal representation with regards to governance, planning, and rates
- More political influence at regulatory level
- More political stability on governing board
- Potential long-term cost efficiencies (direct and indirect)
- Regional planning
- Provide relative savings – slow the rate of increase

WEAKNESSES

Current

- Autocratic governance of water supply and production
- No current Board representation of customer communities
- No accountability to customer communities for how resources are spent or decisions made
- Source water quality
- Source water quantity
- Competing priorities for responding to regional growth
- Availability of purchased capacity to meet growth

Regional Production Entity

- Size of governing body
- Source water quality and quantity are still issues
- Change in workforce impacting level of service
- Cost versus investment – long term change over short term pain
- Buy-in costs
- Conflict between growth and reinvestment
- Right now we know who to blame

OPPORTUNITIES

Current

- Improve current processes
- Individual communities continue to make independent decisions
- More inclusive governance and geographic diversity of Board
- Ability to improve watershed management

Regional Production Entity

- Ability to influence quality and quantity
- Long term bonding capability
- Predictability on revenue and costs
- Better control over resources
- Consistent message communicated with customers
- Input into regional economic development

THREATS

Current

- Competing interests for same source water
- Division/breakup of current customer configuration
- Availability of capacity to meet customer community needs
- Nonpoint source pollution impact on source water
- Climate issues

Regional Production Entity

- Initial cost of buy-in
- Less than 100% participation from communities
- Perception of reduction in work force
- Loss of local control
- Failure to meet customer expectations
- Nonpoint source pollution impact on source water
- Climate issues

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Appendix C

JOINT ENTITY CORE NETWORK

NOVEMBER 2014
PRELIMINARY

Xenia Rural Water District Woodward Water Treatment Pant

Stratford Water Treatment Plant 43 Miles to the North

Polk City WTP and Shallow Wells

ASR #2 Ankeny

ASR #1 Ankeny

GROUND STORAGE AND POLK CO PUMPING STATION

DMWW - Saylorville WTP and Collector Wells

Urbandale WTP Site Property

Urbandale Rock Quarries

WESTSIDE STORAGE LP MOON TANK, PUMP STATION, AND ASR

TENNY STANDPIPE

DM RIVER INTAKE

DM RIVER PUMPING STATION

HAZEN TOWER AND PUMP STATION

WDMWW A.C. Ward Municipal WTP, and Well Field (Shallow Alluvial and Deep Jordan)

98TH STREET WEST DES MOINES STORAGE TANK

DMWW - Fleur WTP

Infiltration Gallery, Recharge Ponds, and Low-Lift Pond Recharge Pump Station

WILCHINSKI STANDPIPE

Racoon River Intake and Pump Station

WTP #1 Altoona and Deep Well

WTP #2 Altoona and Deep Well

WTP #3 Altoona and Deep Well

NOLLEN STANDPIPE AND PUMPING STATION

SHARED EASTSIDE TANK

SE 6 AVE (5420) SE POLK PUMPING STATION

DMWW - McMullen WTP, ASR, Collector Wells, and Surface Water Supply (Maffitt and Crystal Lakes)

Legend

- Elevated Tank
- ASR
- Pump Station
- StandPipe
- Treatment Plant

DMWW Core Water Pipe

- 12"
- 14"
- 16"
- 18"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 60"
- Urbandale Purchased Property

N
W E
S

0 3,250 6,500 13,000 Feet

1 inch = 13,000 feet

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HRG PLOT: 2:09:40 PM 1/27/2015 BY: mliska FILE: \\HRGDMNAS\Data\40140043\GISMXD\CIRDWC_JointEntityCoreNetwork_Preliminary_11x17.mxd