

Wyoming Municipal Power Agency



2011 Integrated Resource Plan

Public Webinar Series

Part 4: Integrated Analysis

- Updated Assumptions
- DSM Evaluation
- Integrated Analysis
- Conclusions & Recommendations

Develop 25-year Load
Forecast

Ability of existing resources to meet
future load demand

Develop Model

Evaluation of demand side management

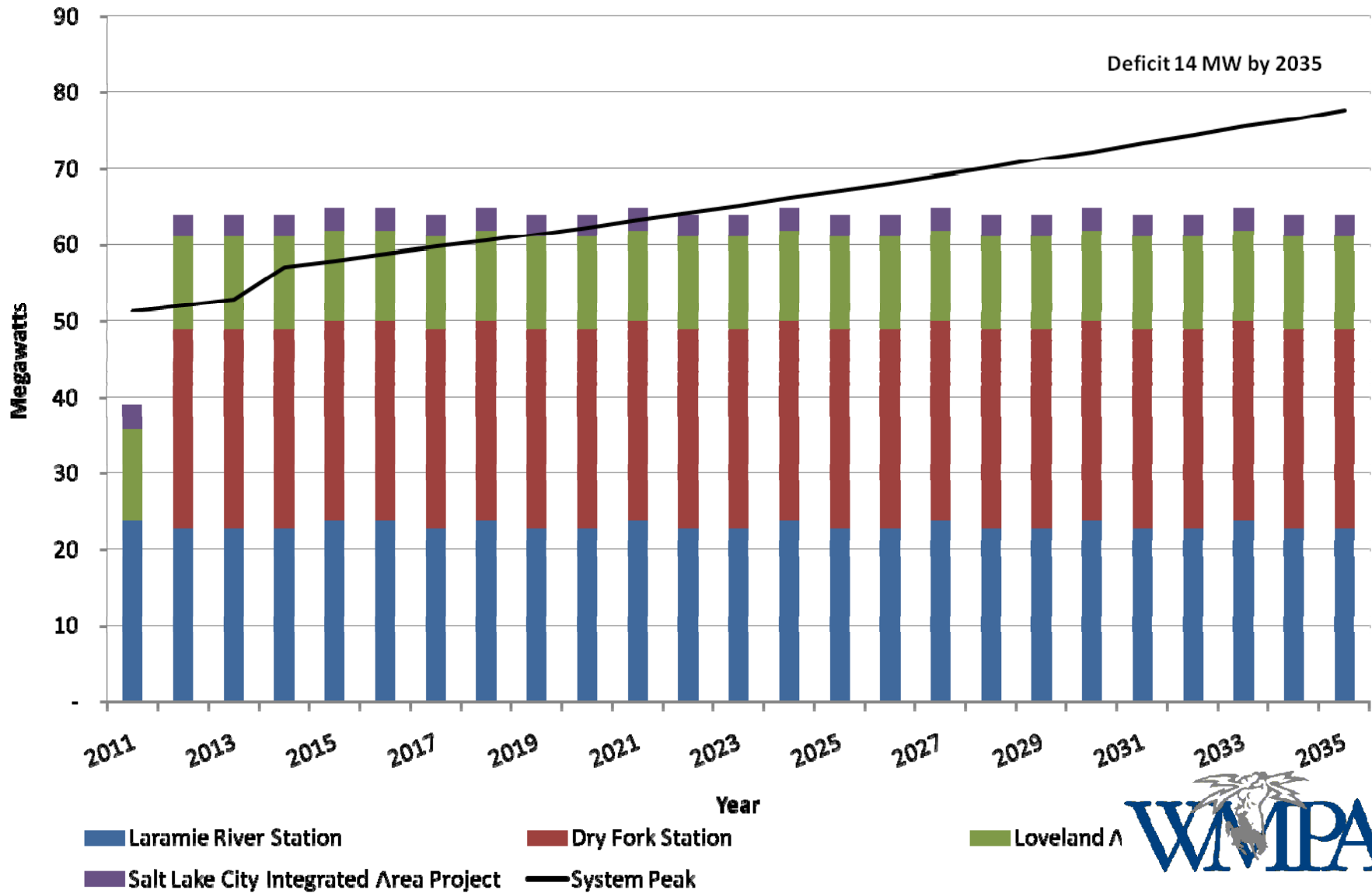
Evaluation of supply side options

Evaluation of integrated supply and
demand side

Conclusion &
Recommendations

Propose a 5- and 25-year plan to meet
needs

Updated Load & Resources



Scenario Comparison

Scenario: Plan Year	Market Capacity RESOURCE(Capacity)	Combined Cycle	Wartsila Engines	Wind Farm
2011	Mkt (12)	Mkt (12)	Mkt (12)	Mkt (12)
2012				
2013				
2014				
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022		FACC (10)	Wartsila (9)	Wartsila (9) Wind (25)
2023	Mkt (1)			
2024	Mkt (1)			
2025	Mkt (3)			
2026	Mkt (4)			
2027	Mkt (4)			
2028	Mkt (6)			
2029	Mkt (7)			
2030	Mkt (7)			
2031	Mkt (9)		Wartsila (9)	
2032	Mkt (11)	FACC (10)		
2033	Mkt (11)			
2034	Mkt (13)			Wartsila (9) Wind (25)
2035	Mkt (14)			
NPV INCREMENTAL COST (@ 6.5%)				
% DIFFERENCE (FROM LOW)	0.00%	10.41%	29.57%	48.68%
Resource Totals				
Max Mkt (MW)	14	12	12	12
Gas (MW)	0	20	18	18
Nameplate Renewable (MW)	0	0	0	50

 -Denotes Brownfield Resource
 -Denotes Greenfield Resource



- DSM programs were evaluated over 10 years.
- Low cost supply side scenario used to establish avoided costs for the DSM program evaluation.
- As stated during Part 2, two test were used:
 - Program Administrator Cost Test
 - Total Resource Cost Test

Program Administrator Cost Test

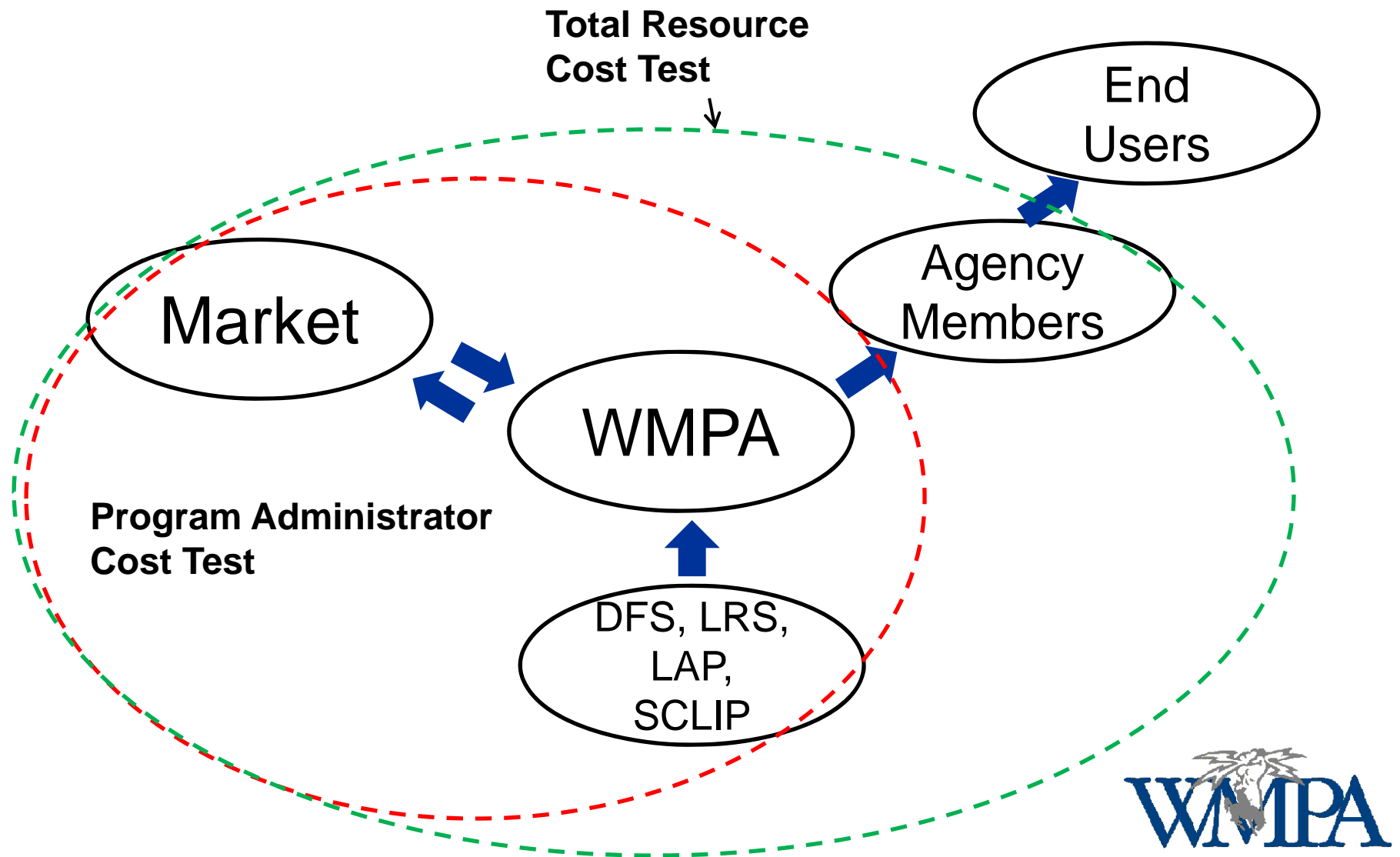
Benefits: avoided supply costs

Costs: utility costs, incentives paid

Total Resource Cost Test

Benefits: avoided supply costs, customer bill savings

Costs: utility costs, incentives paid, customer cost



- No new resources required for capacity until 2022.
- Minimal benefit to WMPA for peak reduction over 10 year period evaluated.

Program Administrator Cost Test

Program	B/C[1]
CAC	0.00
EHWH	0.00

[1] Cost based on administrative expense allocated over two programs.

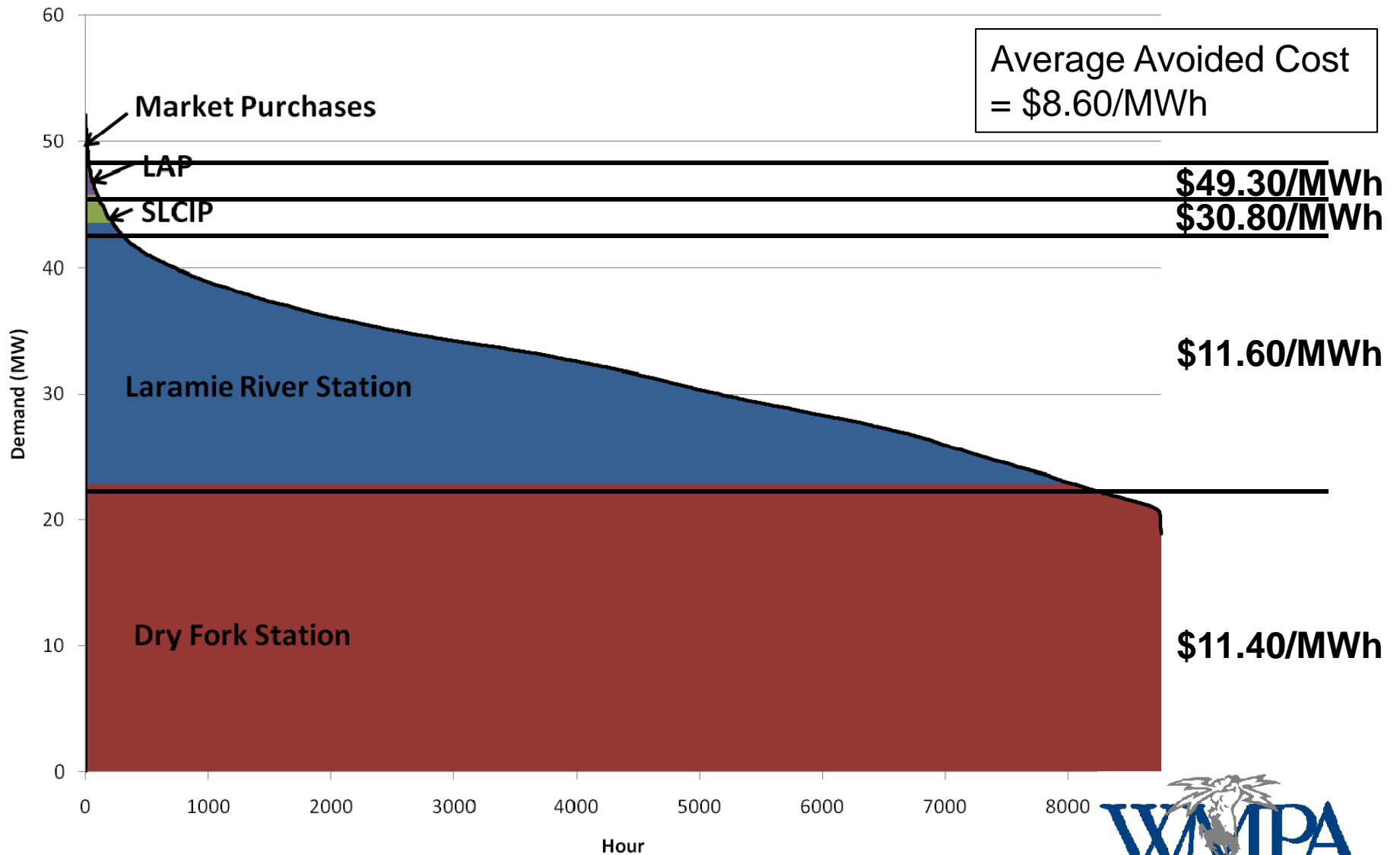
Total Resource Cost Test

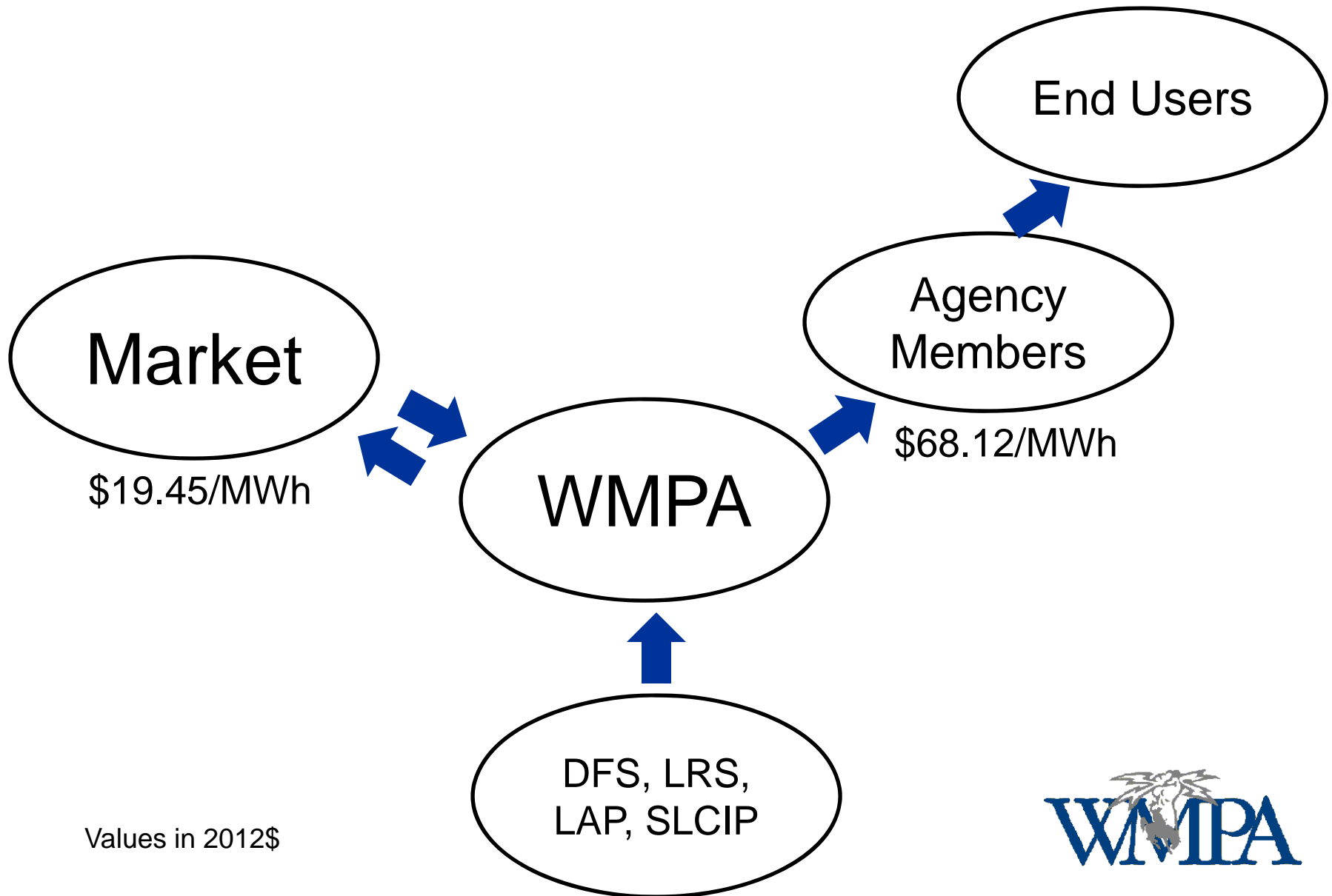
Program	B/C[1]
CAC	0.00
EHWH	0.00

[1] Cost based on administrative expense allocated over two programs.

- Evaluated programs on two levels:
 - Costs and benefits to WMPA and the municipalities they serve.
 - Cost and benefits to WMPA and the municipals' residential customers.
- If programs had a B/C ratio greater than 1, the administrative cost was redistributed over the remaining programs.

2012 Variable Costs





Program Administrator Cost Test

Program	B/C[1]
Air Source Heat Pump	0.07
Room Air Conditioner	0.00
Central Air Conditioner	0.04
Refrigerator	0.09
Freezer	0.02
Dishwasher	0.05
Clothes Washer	0.06
Refrigerator Retirement	0.23

[1] Cost based on administrative cost allocated over eight programs.

Total Resource Cost Test

Program	B/C[1]	B/C[2]
Air Source Heat Pump	0.64	
Room Air Conditioner	0.04	
Central Air Conditioner	0.35	
Refrigerator	0.81	
Freezer	0.20	
Dishwasher	0.40	
Clothes Washer	0.56	
Refrigerator Retirement	2.03	0.31

[1] Cost based on administrative cost allocated over eight programs.

[2] Cost based on administrative cost allocated over one program.

Program Administrator Cost Test

Program	B/C[1]
Air Source Heat Pump	0.07
Room Air Conditioner	0.00
Central Air Conditioner	0.04
Refrigerator	0.09
Freezer	0.02
Dishwasher	0.05
Clothes Washer	0.06
Refrigerator Retirement	0.23

[1] Cost based on administrative cost allocated over eight programs.

Total Resource Cost Test

Program	B/C[1]	B/C[2]	B/C[3]
Air Source Heat Pump	0.36		
Room Air Conditioner	0.07		
Central Air Conditioner	0.35		
Refrigerator	1.32	0.52	
Freezer	0.34		
Dishwasher	0.91		
Clothes Washer	0.30		
Refrigerator Retirement	4.91	1.21	0.61

[1] Cost based on administrative cost allocated over eight programs.

[2] Cost based on administrative cost allocated over two programs.

[3] Cost based on administrative cost allocated over one program.

- Over the 10 year period evaluated, DSM programs provided less benefit to WMPA than assumed cost to implement.
- The lowest cost future integrated resource plan mirrors the low cost supply side future.

- **Demand Side**

- Based on the assumptions made, WMPA cannot afford to incentivize customers.
- DSM programs may start to look favorable closer to 2022 when new capacity is required.
- Should focus on finding larger customers that can provide 1 MW or greater of controllable load.

- **Supply Side**

- Based on load forecast, WMPA is not in need of new capacity until 2022.
- With addition of DFS, WMPA has excess baseload energy in the short and medium-term.
- The resources with the cheapest capital cost investment (\$/kW) should be pursued to minimize cost to WMPA and its members.

- Track actual load growth to that projected. If load growth deviates from projection, timing of new resources should be re-evaluated.
- Watch for opportunities to participate in larger projects, and compare cost to peaking projects that WMPA would control.

- Continue tracking actual load growth to that projected.
- Peaking resources generally have a lead time of 2-3 years; maintain flexibility in resource plan.
- Compare pricing and availability of market capacity to that of peaking resources.
- Watch for opportunities to participate in larger projects, and compare cost to peaking projects that WMPA would control.

Please send questions and
comments to:

irp@wmpa.org

Visit WMPA's website for more
information on the IRP:

www.wmpa.org

Thank you for your time

