UTILITIES PRIVATIZATION
SYSTEM PERFORMANCE METRICS

The following metrics are provided as indicators of increased or decreased utility system performance as a result of privatization:

1. Metric: Number of emergency service requests received each month of each year.

Applicable Systems: Electric, Gas, Water, and Wastewater.

Discussion: Besides the condition of the system, there are many different factors that affect the number of emergency service requests that will be received….weather, size of system, complexity of system, configuration of system, season of the year, definition of emergency service request, amount of ongoing construction, etc., etc. Because of this, the actual number of emergency service requests received is not what is important. What is important is the trend in the numbers.

What to Do: Record the number of emergency service requests received each month (see example table below). Because the SO is required to maintain a record of all service calls for a minimum of two years, this information should be readily available through the COR.

Number of Emergency Service Requests Received													
Year	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**Total**
2008	**105**	**107**	**92**	**65**	**47**	**66**	**75**	**75**	**63**	**73**	**86**	**95**	**949**
2009	**99**	**102**	**86**	**62**	**44**	**62**	**71**	**72**	**59**	**69**	**81**	**90**	**897**
2010	**94**	**97**	**82**	**58**	**41**	**62**	**67**	**68**	**55**	**65**	**77**	**85**	**851**
2011	**87**	**89**	**76**	**53**	**36**	**54**	**60**	**62**	**50**	**58**	**70**	**77**	**772**
2012	**85**	**86**	**74**	**50**	**33**	**52**	**57**	**59**	**48**	**57**	**67**	**75**	**743**
2013	**84**	**85**	**75**	**51**	**35**	**50**	**55**	**58**	**47**	**58**	**66**	**73**	**737**
2014	**84**	**86**	**74**	**50**	**36**	**49**	**56**	**56**	**50**	**56**	**67**	**73**	**737**
Average	**91**	**93**	**80**	**56**	**39**	**56**	**63**	**64**	**53**	**62**	**73**	**81**	**811**

What to Expect: What you should see is a significant decline in the number of emergency service requests over the first 5 to 7 years of the contract. After that, there will be a leveling off at some number significantly below that of the original year. If this occurs, it will be a good indicator that Utilities Privatization is having its intended effect of improving system performance.

2. Metric: Number of unplanned outages (regardless of duration) that occur each month of each year.

Note: This number should not include outages that are related to construction of new facilities regardless of whether they are planned or unplanned (we don't want a high volume of construction efforts to influence this metric).

Applicable Systems: Electric, Gas, Water, and Wastewater.

Discussion: Besides the condition of the system, there are many different factors that affect the number of unplanned outages….weather, size of system, complexity of system, configuration of system, season of the year, etc., etc. Because of this, the actual number of outages is not what is important. What is important is the trend.

What to Do: Record the number of unplanned outages each month (see example table below). This information is contained in the Monthly Outage Report and should be readily available through the COR.

Number of Unplanned Outages													
Year	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**Total**
2008	9	7	6	7	2	5	6	7	2	4	7	7	69
2009	7	6	5	4	2	4	5	5	3	3	6	6	56
2010	5	5	5	3	1	3	3	4	3	2	3	5	42
2011	5	3	2	2	0	3	3	3	2	2	2	4	31
2012	2	0	1	1	0	2	0	1	0	0	1	1	9
2013	2	1	0	2	0	1	1	1	0	0	1	0	9
2014	1	2	1	0	1	1	2	0	0	0	0	1	9
Average	4	3	3	3	1	3	3	3	1	2	3	3	32

What to Expect: What you should see is a significant decline in the number of unplanned outages over the first 5 to 7 years of the contract. After that, there will be a leveling off at some number significantly below that of the original year. If this occurs, it will be a good indicator that Utilities Privatization is having its intended effect of improving system performance.

3. Metric: Number of non-weather-related, unplanned outages (regardless of duration) that occur each month of each year.

Applicable Systems: Electric, Gas, Water, and Wastewater.

Discussion: Besides the condition of the system, there are many different factors that affect the number of non-weather-related unplanned outages….size of system, complexity of system, configuration of system, amount of ongoing construction, etc., etc. Because of this, the actual number of outages is not what is important. What is important is the trend. This metric eliminates counting of weather-related outages that are beyond the SO's control and also makes comparisons between bad weather and good weather years more equal. As a

result, it may be a better indicator of system performance than Metric #2. Having said that, it should be noted that, within technical and economic limitations, utility systems are generally built to withstand the weather conditions they are normally subjected to. Thus, we should always be critical of discounting those weather-related outages that the system should clearly be designed to withstand.

What to Do: Record the number of non-weather-related, unplanned outages each month (see example table below). This information is contained in the Monthly Outage Report and should be readily available through the COR. Some data mining will be required to separate weather-related from non-weather-related outages.

Number of Non-Weather-Related, Unplanned Outages													
Year	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**Total**
2008	**5**	**5**	**5**	**7**	**2**	**5**	**6**	**7**	**2**	**4**	**3**	**3**	**54**
2009	**4**	**4**	**5**	**4**	**2**	**4**	**5**	**5**	**3**	**3**	**4**	**3**	**46**
2010	**3**	**3**	**5**	**3**	**1**	**3**	**3**	**4**	**3**	**2**	**2**	**2**	**34**
2011	**3**	**1**	**2**	**2**	**0**	**3**	**3**	**3**	**2**	**1**	**1**	**2**	**23**
2012	**1**	**0**	**1**	**1**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**6**
2013	**1**	**0**	**0**	**2**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**6**
2014	**0**	**1**	**1**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**7**
Average	**2**	**2**	**3**	**3**	**1**	**3**	**3**	**3**	**1**	**1**	**1**	**2**	**25**

What to Expect: What you should see is a significant decline in the number of non-weather-related, unplanned outages over the first 5 to 7 years of the contract. After that, there will be a leveling off at some number significantly below that of the original year. If this occurs, it will be a good indicator that Utilities Privatization is having its intended effect of improving system performance.

4. Metric: Percent of available man-hours spent on emergency service requests.

Applicable Systems: Electric, Gas, Water, and Wastewater.

Discussion: The actual percentage is important but could vary based upon the timing of emergency service requests (which directly affects overtime) and the amount and types of work a given SO assigns to its subcontractors. Because of this, the trend is a more important indicator of improvement.

What to Do:

1. Record the percent of available man-hours spent on emergency service requests (see example table below).
2. Divide the total man-hours spent on emergency service requests by the total available man-hours to be spent on emergency service requests.

3. The total man-hours spent on emergency service requests equals the in-house normal duty man-hours plus the in-house overtime man-hours plus the subcontractor normal duty man-hours plus the subcontractor overtime man-hours.
4. The total available man-hours to be spent on emergency service requests equals the total in-house normal duty man-hours available plus the subcontractor normal duty man-hours spent plus the subcontractor overtime man-hours spent).
5. For example: if there were 1,280 in-house normal duty man-hours available and 700 in-house normal duty man-hours, 100 in-house overtime man-hours, 90 subcontractor normal duty man-hours, and 80 subcontractor overtime man-hours were spent on emergency service requests; the calculation would be (700 + 100 + 90 +80) / (1,280 + 90 + 80) = 67%.
6. **Note 1:** The in-house and subcontractor man-hours we're measuring are the man-hours of the field workers (superintendents and below). We are not measuring the man–hours of the support staff.
7. **Note 2:** The SO will probably have this information but there is no requirement in the contract for him to maintain it or to provide it to the Government. If requested, the SO may opt to provide it as an indicator of improved system performance.

Percent of Available Man-Hours Spent on Emergency Service Requests													
Year	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**Total**
2008	**72**	**67**	**54**	**35**	**37**	**54**	**56**	**58**	**35**	**40**	**55**	**64**	**627**
2009	**58**	**54**	**43**	**28**	**30**	**43**	**45**	**46**	**28**	**32**	**44**	**51**	**502**
2010	**46**	**43**	**35**	**22**	**24**	**35**	**36**	**37**	**22**	**26**	**35**	**41**	**402**
2011	**37**	**34**	**28**	**20**	**19**	**28**	**29**	**30**	**20**	**21**	**28**	**33**	**327**
2012	**29**	**27**	**22**	**16**	**16**	**22**	**23**	**24**	**16**	**16**	**23**	**26**	**260**
2013	**23**	**22**	**18**	**14**	**15**	**18**	**18**	**19**	**14**	**15**	**18**	**21**	**215**
2014	**18**	**16**	**14**	**13**	**15**	**14**	**16**	**17**	**13**	**15**	**14**	**15**	**180**
Average	**40**	**38**	**31**	**21**	**22**	**31**	**32**	**33**	**21**	**24**	**31**	**36**	**30**

What to Expect: What you should see is a significant decline in the percentage of available man-hours spent on emergency service requests over the first 5 to 7 years of the contract and then a leveling off at around 15%. If this occurs, it will be a good indicator that Utilities Privatization is having its intended effect of improving system performance.

5. Metric: SAIDI, SAIFI, and CAIDI indices.

SAIDI – System Average Interruption Duration Index is an annual measurement of the average outage duration for each customer. It is calculated by dividing the total number of sustained customer interruption minutes by the total number of customers.

SAIFI – System Average Interruption Frequency Index is an annual measurement of the average number of outages each customer will experience. It is calculated by dividing the total number of sustained customer interruptions by the total number of customers.

CAIDI – Customer Average Interruption Duration Index is the average restoration rate for an outage. It is calculated by dividing the total number of sustained customer interruption minutes by the total number of customer interruptions.

Applicable Systems: Electric.

Discussion: SAIDI, CAIDI, and CAIFI are nationally recognized electrical system reliability indices. If the SO is truly maintaining the system to industry standards, then his SAIDA, CAIDI, and CAIFI indices should be equal to or better than the current Institute of Electrical and Electronic Engineers (IEEE) regional standard.

What to Do: Although the contract does not require the SO to compute these indices, many Offerors claim they use them as metrics to measure system performance. Ask the COR if the SO can provide you with his SAIDI, CAIDI, and CAIFI indices (along with the current IEEE regional standards for each) for each previous year of the contract. Initially, the COR should ask the SO if the information is readily available. If yes, the CO should request that the SO provide the information on an annual basis.

What to Expect: What you should see is a lessening of the gap between the Base's numbers and the IEEE regional standards over time. This "lessening of the gap" will be a good indicator that Utilities Privatization is having its intended effect of improving system performance.

6. Metric: Electric consumption.

Applicable Systems: Electric.

Discussion: Over time, the SO will be replacing less efficient components, downsizing transformers, etc. These activities should result in measurable, decreased electrical consumption.

What to Do: Obtain electrical consumption records from Civil Engineering. Compare past to current year consumption statistics. Talk with the appropriate Civil Engineering personnel to determine if non-utility privatization activities may be responsible for the decreases or increases discovered.

What to Expect: As ISDCs are completed and R&R is performed, electrical consumption will decrease. Depending on the Base, the decrease may or may not be significant enough to discern. It should be noted that changes in missions or the introduction of new energy conservation efforts may make decreases in consumption due to privatization difficult to measure.

7. Metric: Gas consumption.

Applicable Systems: Gas.

Discussion: Over time, the SO will be replacing system components. These activities may result in measurable, decreased gas consumption.

What to Do: Obtain gas consumption records from Civil Engineering. Compare past to current year consumption statistics. Talk with the appropriate Civil Engineering personnel to determine if non-utility privatization activities may be responsible for the decreases or increases discovered.

What to Expect: As ISDCs are completed and R&R is performed, gas consumption may decrease. Depending on the Base, the decrease may or may not be significant enough to discern. It should be noted that changes in missions or the introduction of new energy conservation efforts may make decreases in consumption due to privatization difficult to measure.

8. Metric: Water quality. Percent of analyzed samples that are in compliance with environmental requirements.

Applicable Systems: Water.

Discussion: If the SO is maintaining the system to industry standards, then his lab results may reflect a reduction in the number of samples that are not in compliance with environmental requirements.

What to Do: Most Utility Specific Section JA attachments to the Utility Services contracts require the SO to provide the installation Bioenvironmental Engineering Office, CO, and/or COR with a copy of all drinking water sample analysis reports required to be performed by the state or local authority. Obtain these reports from the COR and calculate the number of samples submitted and the number of samples submitted that are not in compliance with environmental requirements.

What to Expect: If the Base had water quality problems before privatization, you should see a definite reduction in the number of non-compliant samples. This reduction should occur rapidly (within the first year or two of the contract).

9. Metric: Water consumption.

Applicable Systems: Water.

Discussion: During the first years of the contract, the SO will be replacing components that have already passed their expected useful life. This should significantly reduce water consumption.

What to Do: Obtain water consumption records from Civil Engineering. Compare past to current year consumption statistics. Talk with the appropriate Civil Engineering personnel to determine if non-utility privatization activities may be responsible for any of the decreases or increases discovered.

What to Expect: As ISDCs are completed and R&R is performed, water consumption will decrease significantly. The older the pre-privatization infrastructure is, the greater the decrease will be. For older systems, decreases as large as 30% may be realized.

10. Metric: Wastewater quality. Percent of analyzed samples that are in compliance with environmental requirements.

Applicable Systems: Wastewater.

Discussion: If the SO is maintaining the system to industry standards, then his lab results may reflect it via a reduction in the number of samples that are not in compliance with environmental requirements.

What to Do: Most Utility Specific Section JA attachments in the Utility Services contracts require the SO to provide the installation CO and/or COR with a copy of all wastewater sample analysis reports required to be performed by the state or local authority. Obtain these reports from the COR and calculate the number of samples submitted and the number of samples submitted that are not in compliance with environmental requirements.

What to Expect: If the Base had wastewater quality problems before privatization, you should see a definite reduction in the number of non-compliant samples. This reduction should occur rapidly (within the first year or two of the contract).

11. Metric: Wastewater production.

Applicable Systems: Wastewater.

Discussion: During the first years of the contract, the SO will be replacing components that have already passed their expected useful life. This should significantly reduce Infiltration and Inflow (seepage into the wastewater lines from the surrounding area) and subsequently reduce the amount of wastewater being processed at the wastewater treatment plant.

What to Do: Obtain wastewater production records from Civil Engineering (the metered amount entering the Base wastewater treatment plant or the metered amount exiting the Base to be treated at an off-Base wastewater treatment plant). Compare past to current year production statistics. Talk with the appropriate Civil Engineering personnel to determine if non-utility privatization activities may be responsible for the decreases or increases discovered.

What to Expect: As ISDCs are completed and R&R is performed, wastewater production should decrease significantly due to reductions in Infiltration and Inflow. The older the pre-privatization infrastructure is, the greater the decrease will be.