

Utility Industry Group Implementation Standard

for

Electronic **D**ata **I**nterchange

TRANSACTION SET

650

Maintenance Service Order

Ver/Rel 004010

Meter Specific Information

Summary of Changes

February 9, 2000

Initial release.

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650 Maintenance Service Order

Introduction

The function of the Utility Industry Group is

To represent Electric, Gas, and Combination Utilities, their suppliers, their customers, and other interested parties as an Industry Action Group to the American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12, specifically in the standards-setting process, for their Electronic Data Interchange business needs.

To encourage, promote, and establish conventions for the use of ASC X12 standards as the "recommended" method of EDI. To develop and coordinate, as required, implementation standards and tools to promote the growth and timely implementation of Electronic Commerce/EDI within the industry

To provide a forum for the exchange of ideas related to Electronic Commerce/EDI and its influence on the business needs of the industry.

The UIG will represent the Edison Electric Institute (EEI) and its members to facilitate implementation of Electronic Commerce/EDI in the Utility Industry.

Purpose

This Utility Industry Group (UIG) Implementation Standard contains the format and establishes the data contents of the Maintenance Service Order (650) as adopted by the UIG for use within the context of an Electronic Data Interchange (EDI) environment. This standard can be used to request actions to be performed, to respond to a request for actions to be performed, or to report on existing or new detailed meter information.

Notes

This Utility Industry Group (UIG) Implementation Standard contains the format and establishes the data contents of the Maintenance Service Order (650) as adopted by the UIG for use within the context of an Electronic Data Interchange (EDI) environment. This standard can be used to report on specific meter information, request and respond to actions (i.e. schedule meter installation), and report on existing meter configurations, new meter installations and removals on behalf of the customer.

The principal parties involved in the this Transaction Set 650 implementation are:

- The end-use customer (Code 8R)
- The entity which provides services to the customer on behalf of another entity (Code 8S)
- The entity which has the primary business relationship with the customer (Code SJ)
- The entity which manages the meter data on behalf of another, (Code 55)

When this transaction set is used in an alternative energy supply environment, Code 8S identifies the local distribution utility (LDC) and Code SJ identifies the alternative energy service provider (ESP), and Code 55 identifies the Meter Data Management Agent (MDMA).

650 Maintenance Service Order

Best Practices

Global Best Practices

Use of Text Segments

The UIG recommends that the note (NTE) segment be avoided because this segment is not machine-readable. Other text segments, such as MSG and MTX, may be used if their use will lead to machine processable information in subsequent applications.

Use of ZZ Qualifier

The use of data fields to transmit uncoded or textual information should be avoided. This practice is usually associated with the use of the ZZ qualifier as a normal course of doing business.

997 - Functional Acknowledgment

The purpose of the 997 is to verify receipt of a transmitted document only, not the acceptance of the document. For example, the acceptance of a purchase order (850) is accomplished through the use of the purchase order acknowledgment transaction (855).

Interchange Control Number

A unique and sequential interchange control number should be used on every envelope that is transmitted to a trading partner. This approach will allow the receiver to audit the interchange for any duplicate or missing transmissions.

Use of Dun & Bradstreet (D-U-N-S) Number

Dun & Bradstreet assigns a nine-digit identification number to every business entity. This number, known as the D-U-N-S number, should be used to identify the trading partners. A trading partner may append a four-digit suffix to the D-U-N-S number to uniquely identify a specific location within the entity; this number is referred to as a D-U-N-S + 4 number

Banking Transactions

Standards that outline the use of transactions relating to interactions between a sender and the sender's financial institution are available from the Bankers EDI Council and the NACHA EDI Council. Other publications that address the use of financial payment transactions include Technical Report 1 (TR1) and Technical Report 2 (TR2); both of these publications are available from DISA.

Capitalization

The use of all upper case (capital) letters is preferred over the use of mixed upper and lower case letters.

Document-Specific Best Practices

Use of the N1 Loop

If any one entity performs more than one of the business functions provided in the N1, the loop should be repeated as necessary to identify that entity as the provider of those functions.

Use of the HL Loop

The HL segment is used to identify levels of detail information using a hierarchical structure, such as a parent-child relationship. UIG recommends using a separate HL loop to describe each individual meter or recorder. The HL loop is useful in describing meter installations where a totalizer or recorder summarizes data from separate metering devices, in a parent-child relationship.

Use of the NM1 Loop

The NM1 segment is used for looping purposes only. The COM segment is used to communicate the Meter telephone number.

Use of the MTX Loop

The MTX segment is used to identify meter access instructions, physical meter instructions and general remarks about the meter site, account etc.

650 Maintenance Service Order

Functional Group ID=**MO**

Introduction:

This Draft Standard for Trial Use contains the format and establishes the data contents of the Maintenance Service Order Transaction Set (650) for use within the context of an Electronic Data Interchange (EDI) environment. This transaction set provides a uniform, singular medium for the exchange of maintenance related information among organizations involved in the reporting, requesting, scheduling, planning, estimating, coordinating and performing of maintenance actions. It provides the structure to convey maintenance-related information, including maintenance action directives, maintenance actions, cost estimates, maintenance action assignments, maintenance action status, and completion reports. This transaction set can be used in a bi-directional environment alone or in conjunction with the Project Schedule Reporting Transaction Set (806) to link schedule and maintenance action information as well as with the Specifications/Technical Information Transaction Set (841) to link maintenance-related, media independent, technical data.

Heading:

	<u>Pos. No.</u>	<u>Seg. ID</u>	<u>Name</u>	<u>Req. Des.</u>	<u>Max.Use</u>	<u>Loop Repeat</u>	<u>Notes and Comments</u>
M	010	ST	Transaction Set Header	M	1		
M	020	BGN	Beginning Segment	M	1		
			LOOP ID - N1			>1	
	050	N1	Name	O	1		n1
	070	N3	Address Information	O	2		
	080	N4	Geographic Location	O	1		
	090	PER	Administrative Communications Contact	O	>1		
	100	REF	Reference Identification	O	>1		

Detail:

	<u>Pos. No.</u>	<u>Seg. ID</u>	<u>Name</u>	<u>Req. Des.</u>	<u>Max.Use</u>	<u>Loop Repeat</u>	<u>Notes and Comments</u>
			LOOP ID - HL			>1	
M	010	HL	Hierarchical Level	M	1		n2
	030	REF	Reference Identification	O	>1		
	050	DTM	Date/Time Reference	O	>1		
	070	YNQ	Yes/No Question	O	>1		n3
	100	MEA	Measurements (Meter Characteristics)	O	>1		
	100	MEA	Measurements (Meter Reads)	O	>1		
			LOOP ID - NM1			>1	
	190	NM1	Individual or Organizational Name	O	1		n4
	230	COM	Communication Contact Information	O	>1		
			LOOP ID - MTX			>1	
	250	MTX	Text	O	1		
M	290	SE	Transaction Set Trailer	M	1		

Transaction Set Notes

1. The N1 segment identifies the organization originating and receiving the transaction set.
2. The HL levels are group work candidate and work candidate. Valid HL parent-child relationships are 1) group work candidate-group work candidate and 2) group work candidate-work candidate.
3. The YNQ segment identifies conditions related to a maintenance or repair requirement.
4. The NM1 segment identifies individuals and organizations involved in identifying, coordinating or performing maintenance.

Segment: **ST** Transaction Set Header
Position: 010
Loop:
Level: Heading
Usage: Mandatory
Max Use: 1
Purpose: To indicate the start of a transaction set and to assign a control number
Syntax Notes:
Semantic Notes: 1 The transaction set identifier (ST01) is used by the translation routines of the interchange partners to select the appropriate transaction set definition (e.g., 810 selects the Invoice Transaction Set).
Comments:
Notes:

ST~650~00000001\

Data Element Summary

Ref.	Data Element	Name	Attributes
M	ST01	143 Transaction Set Identifier Code Code uniquely identifying a Transaction Set	M ID 3/3
		650 Maintenance Service Order	
M	ST02	329 Transaction Set Control Number Identifying control number that must be unique within the transaction set functional group assigned by the originator for a transaction set	M AN 4/9

Segment: **BGN** Beginning Segment
Position: 020
Loop:
Level: Heading
Usage: Mandatory
Max Use: 1
Purpose: To indicate the beginning of a transaction set
Syntax Notes: 1 If BGN05 is present, then BGN04 is required.
Semantic Notes: 1 BGN02 is the transaction set reference number.
 2 BGN03 is the transaction set date.
 3 BGN04 is the transaction set time.
 4 BGN05 is the transaction set time qualifier.
 5 BGN06 is the transaction set reference number of a previously sent transaction affected by the current transaction.

Comments:

Notes:

	BGN01	BGN07	BGN08
METER INFORMATION (MI) Report -----	00	IA	RS
METER AND DATA COMMUNICATION REQUEST OR RESPONSE (MDCR) Set Schedule (Request) -----	13	KH	SL
Change Schedule (Request) -----	13	KH	2
Cancel Schedule (Request) -----	13	KH	C
Cannot Proceed (Respond) -----	11	KH	9
Pending Schedule (Respond) -----	11	KH	86
Accept Schedule (Respond) -----	11	KH	WQ
METER INSTALLATION AND REMOVAL NOTIFICATION (MIRN) Report -----	00	IA	51

BGN~00~199905021234567~19990502~1546~PT~199904311234566~IA~RS\

Data Element Summary

Ref.	Data Element	Name	Attributes
M	BGN01	353 Transaction Set Purpose Code	M ID 2/2
		Code identifying purpose of transaction set	
		00 Original	Notification that conditions were found or actions were taken as described in this transaction. (Used with Meter Information - MI and Meter Installation and Removal Notification - MIRN).
		11 Response	(Used with Meter and Data Communication Request or Response (MDCR) - Valid on Response)
		13 Request	(Used with Meter and Data Communication Request or Response (MDCR) - Valid on Response)
M	BGN02	127 Reference Identification	M AN 1/30
		Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier	
		A unique transaction identification number assigned by the originator of this transaction. This number must be unique over time.	
		Transaction Reference numbers will only contain uppercase letters (A to	

			Z) and digits (0 to 9). Note that punctuation (spaces, dashes, etc.) must be excluded.	
M	BGN03	373	Date Date expressed as CCYYMMDD The transaction creation date - the date that the data was processed by the sender's application system.	M DT 8/8
	BGN04	337	Time Time expressed in 24-hour clock time as follows: HHMM, or HHMMSS, or HHMMSSD, or HHMMSSDD, where H = hours (00-23), M = minutes (00-59), S = integer seconds (00-59) and DD = decimal seconds; decimal seconds are expressed as follows: D = tenths (0-9) and DD = hundredths (00-99)	X TM 4/8
	BGN05	623	Time Code Code identifying the time. In accordance with International Standards Organization standard 8601, time can be specified by a + or - and an indication in hours in relation to Universal Time Coordinate (UTC) time; since + is a restricted character, + and - are substituted by P and M in the codes that follow AT Alaska Time CT Central Time ET Eastern Time GM Greenwich Mean Time HT Hawaii-Aleutian Time MT Mountain Time PT Pacific Time UT Universal Time Coordinate	O ID 2/2
>>	BGN06	127	Reference Identification Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier If used, refers to the BGN02 identification number of the original request or notification. During processing of a 814 Enrollment, refers to the Enrollments original transaction number.	O AN 1/30
	BGN07	640	Transaction Type Code Code specifying the type of transaction 14 Maintenance Response Report meter test results IA Inventory Description of the customer's meter installation. KH Change Order Change to the customer's meter installation	O ID 2/2
	BGN08	306	Action Code Code indicating type of action 2 Change (Update) Change or correction of previously submitted information. Valid on MDCR Request. 9 Not Capable of Taking Action Notice that proposed action cannot proceed because provided information is incorrect or does not meet requirements. Valid on MDCR Response. 51 Complete Meter Installation and/or Removal Notification: After an action is complete (meter installed, removed, configured) this 650 is used to provide the new Meter Information. Valid on MIRN. 86 Pended for Follow Up The requested schedule date cannot be met. Valid	O ID 1/2

	on MDCR Response.
C	Cancelled Cancellation of a scheduled event. Valid on MDCR Request.
RS	Report Status Report Status of existing meter installation. Valid for MI.
SL	Schedule Schedule of anticipated events. Valid for MDCR Request.
WQ	Accept Accept a scheduled event. Valid for MDCR Response.

Segment: **N1 Name**
Position: 050
Loop: N1 Optional
Level: Heading
Usage: Optional
Max Use: 1
Purpose: To identify a party by type of organization, name, and code
Syntax Notes:
 1 At least one of N102 or N103 is required.
 2 If either N103 or N104 is present, then the other is required.
Semantic Notes:
Comments:
 1 This segment, used alone, provides the most efficient method of providing organizational identification. To obtain this efficiency the "ID Code" (N104) must provide a key to the table maintained by the transaction processing party.
 2 N105 and N106 further define the type of entity in N101.
Notes:
 N1~8S~UTILITY COMPANY~1~006901234~~41\
 N1~SJ~ENERGY SUPPLIER~9~123456789ESP1~~40\
 N1~8R~CUSTOMER NAME\

Data Element Summary

Ref.	Data Element	Name	Attributes	
			M	ID 2/3
M	N101	Entity Identifier Code		
		Code identifying an organizational entity, a physical location, property or an individual		
	28	Subcontractor		
		Identifies the party that installs a meter		
	48	In-service Source		
		Source placing product into service		
		Meter Reading Service Provider (MSRP)		
	55	Service Manager		
		Person responsible for service department		
		Identifies the party that manages meter data on behalf of another. Often referred to as the Meter Data Management Agent (MDMA)		
	85	Billing Provider		
		Billing Agent		
	8R	Consumer Service Provider (CSP) Customer		
		Identifies the Customer associated with the service account. The N3 and N4 segments in the N1 loop qualified by 8R specify the service address		
	8S	Consumer Service Provider (CSP)		
		Utility (LDC)		
	90	Previous Business Partner		
		Identifies the customer's previous ESP		
	92	Support Party		
		The organization supporting the resolution of an investigation		
		Identifies a pending MDMA		
	H8	Servicing Agent		
		Identifies the party that services and maintains the meter. (Meter Service Provider - MSP)		
	JX	Closing Agent		
		Identifies the previous MDMA		
	SJ	Service Provider		
		Identifies name and address information as pertaining to a service provider for which billing is		

			being rendered		
			Energy Service Provider (ESP)		
>>	N102	93	Name	X	AN 1/60
			Free-form name		
>>	N103	66	Identification Code Qualifier	X	ID 1/2
			Code designating the system/method of code structure used for Identification Code (67)		
			1 D-U-N-S Number, Dun & Bradstreet		
			9 D-U-N-S+4, D-U-N-S Number with Four Character Suffix		
>>	N104	67	Identification Code	X	AN 2/80
			Code identifying a party or other code		
			D-U-N-S or D-U-N-S + 4 Number		
>>	N106	98	Entity Identifier Code	O	ID 2/3
			Code identifying an organizational entity, a physical location, property or an individual		
			40 Receiver		
			Entity to accept transmission		
			41 Submitter		
			Entity transmitting transaction set		

Segment: **N3** Address Information
Position: 070
Loop: N1 Optional
Level: Heading
Usage: Optional
Max Use: 2
Purpose: To specify the location of the named party
Syntax Notes:
Semantic Notes:
Comments:
Notes: Valid only when N101="8R"
 N3~123 MAIN ST\

Data Element Summary

Ref.	Data			Attributes
<u>Des.</u>	<u>Element</u>	<u>Name</u>		
M	N301	166	Address Information Address information Service Address	M AN 1/55
	N302	166	Address Information Address information Service Address Overflow	O AN 1/55

Segment: **N4 Geographic Location**
Position: 080
Loop: N1 Optional
Level: Heading
Usage: Optional
Max Use: 1
Purpose: To specify the geographic place of the named party
Syntax Notes: 1 If N406 is present, then N405 is required.
Semantic Notes:
Comments: 1 A combination of either N401 through N404, or N405 and N406 may be adequate to specify a location.
 2 N402 is required only if city name (N401) is in the U.S. or Canada.
Notes: N4~ANYTOWN~CA~99999\

Data Element Summary

<u>Ref. Des.</u>	<u>Data Element</u>	<u>Name</u>	<u>Attributes</u>
N401	19	City Name Free-form text for city name	O AN 2/30
N402	156	State or Province Code Code (Standard State/Province) as defined by appropriate government agency	O ID 2/2
N403	116	Postal Code Code defining international postal zone code excluding punctuation and blanks (zip code for United States)	O ID 3/15
N404	26	Country Code Code identifying the country	O ID 2/3

Segment: **PER Administrative Communications Contact**

Position: 090

Loop: N1 Optional

Level: Heading

Usage: Optional

Max Use: >1

Purpose: To identify a person or office to whom administrative communications should be directed

- Syntax Notes:**
- 1 If either PER03 or PER04 is present, then the other is required.
 - 2 If either PER05 or PER06 is present, then the other is required.
 - 3 If either PER07 or PER08 is present, then the other is required.

Semantic Notes:

Comments:

Notes: PER~IC~JOE METER~BN~4155551234

Data Element Summary

Ref.	Data Element	Name	Attributes	
			M	ID 2/2
M	PER01	366 Contact Function Code Code identifying the major duty or responsibility of the person or group named IC Information Contact		
	PER02	93 Name Free-form name	O	AN 1/60
	PER03	365 Communication Number Qualifier Code identifying the type of communication number BN Beeper Number CP Cellular Phone EM Electronic Mail FX Facsimile TE Telephone	X	ID 2/2
	PER04	364 Communication Number Complete communications number including country or area code when applicable	X	AN 1/80
	PER05	365 Communication Number Qualifier Code identifying the type of communication number BN Beeper Number CP Cellular Phone EM Electronic Mail FX Facsimile TE Telephone	X	ID 2/2
	PER06	364 Communication Number Complete communications number including country or area code when applicable	X	AN 1/80
	PER07	365 Communication Number Qualifier Code identifying the type of communication number BN Beeper Number CP Cellular Phone EM Electronic Mail FX Facsimile TE Telephone	X	ID 2/2
	PER08	364 Communication Number Complete communications number including country or area code when applicable	X	AN 1/80

Segment: **REF** Reference Identification
Position: 100
Loop: N1 Optional
Level: Heading
Usage: Optional
Max Use: >1
Purpose: To specify identifying information
Syntax Notes:
 1 At least one of REF02 or REF03 is required.
 2 If either C04003 or C04004 is present, then the other is required.
 3 If either C04005 or C04006 is present, then the other is required.
Semantic Notes:
 1 REF04 contains data relating to the value cited in REF02.
Comments:
Notes:
 REF~11~ESP123456789\
 REF~12~LDC123456789\
 REF~6S~WO9876\

Data Element Summary

Ref. Des.	Data Element	Name	Attributes
M REF01	128	Reference Identification Qualifier Code qualifying the Reference Identification	M ID 2/3
	11	Account Number Number identifies a telecommunications industry account Energy Service Provider-assigned customer account number for the end use customer.	
	12	Billing Account Account number under which billing is rendered Utility-assigned customer account number for the end use customer.	
	45	Old Account Number Identifies accounts being changed Previous utility-assigned account number for the end use customer	
	6S	Provider Order Ticket Number Number assigned by information provider company for work order tracking Additional identification number if needed for reference to a related transaction, such as an ESP or MSP work order number.	
	F4	Facility Certification Number A unique number assigned to qualifying facilities to perform services Certification number for the MSP	
REF02	127	Reference Identification Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier	X AN 1/30

Segment: **HL Hierarchical Level**
Position: 010
Loop: HL Mandatory
Level: Detail
Usage: Mandatory
Max Use: 1
Purpose: To identify dependencies among and the content of hierarchically related groups of data segments

Syntax Notes:
Semantic Notes:
Comments:

- 1 The HL segment is used to identify levels of detail information using a hierarchical structure, such as relating line-item data to shipment data, and packaging data to line-item data. The HL segment defines a top-down/left-right order structure
- 2 HL01 shall contain a unique alphanumeric number for each occurrence of the HL segment in the transaction set. For example, HL01 could be used to indicate the number of occurrences of the HL segment, in which case the value of HL01 would be "1" for the initial HL segment and would be incremented by one in each subsequent HL segment within the transaction.
- 3 HL02 identifies the hierarchical ID number of the HL segment to which the current HL segment is subordinate.
- 4 HL03 indicates the context of the series of segments following the current HL segment up to the next occurrence of an HL segment in the transaction. For example, HL03 is used to indicate that subsequent segments in the HL loop form a logical grouping of data referring to shipment, order, or item-level information.
- 5 HL04 indicates whether or not there are subordinate (or child) HL segments related to the current HL segment.

Notes: Use a separate HL loop to describe each individual meter or recorder. The HL loop is useful in describing meter installations where a totalizer or recorder summarizes data from separate metering devices, in a parent-child relationship.

HL~1~~EV~1\ =Parent HL Loop (Contains data about recorder)
 HL~2~1~EV~0\ =Child HL Loop (This is the kWh meter)
 HL~3~1~EV~0\ =Child HL Loop (This is the kVARh meter)

Data Element Summary

Ref.	Data Element	Name	Attributes
M	HL01	Hierarchical ID Number A unique number assigned by the sender to identify a particular data segment in a hierarchical structure	M AN 1/12
>>	HL02	Hierarchical Parent ID Number Identification number of the next higher hierarchical data segment that the data segment being described is subordinate to Required for child HL Loops to indicate the parent identification that was provided in the HL01 of the parent Loop.	O AN 1/12
M	HL03	Hierarchical Level Code Code defining the characteristic of a level in a hierarchical structure	M ID 1/2
		EV Event Other type of action or report. Valid for MI	
		IN Interchange Change to the existing meter's installation. Valid for MIRN / MDCR - Request and Response	
		O Order Set new meter in place. Valid for MIRN / MDCR - Request and Response	

			TI	Technical Information Package Reprogram the existing meter at the meter site. Valid for MIRN / MDCR - Request and Response
			WB	Work Breakdown Structure An individual element of work portrayed in tree structure stages of the total performance of a contract Remove meter. Valid for MIRN / MDCR - Request and Response
>>	HL04	736	Hierarchical Child Code	O ID 1/1
				Code indicating if there are hierarchical child data segments subordinate to the level being described
			0	No Subordinate HL Segment in This Hierarchical Structure.
			1	Additional Subordinate HL Data Segment in This Hierarchical Structure.

	4160:120).
9X	Account Category Type of service (electric, gas). See REF02 for valid values.
BZ	Complaint Code Number categorizing customer complaints Reason for testing device.
DM	Associated Product Number Register Type
E9	Attachment Code Supplementary reference information Communication Device Type (e.g., line share switch)
EL	Electronic device pin number Pulse contact type.
EQ	Equipment Number ESP's Meter Number. ESP's identification number for customer's meter.
EX	Estimate Number Load Research Meter Number.
FB	File Transfer Form Number Direction for initiating communication (inbound/outbound). See REF02 for valid values.
FQ	Form Number Form (including base) configuration. (Form indicated on faceplate of meter - meter configuration, containing condensed meter information).
JH	Tag Meter Role. See REF02 for valid values.
LU	Location Number Identifier for the Service Delivery Point. Use REF03 for SDP number.
MF	Manufacturers Part Number American Electrical Power Standard Number (AEP Serial Number) - Meter Number of the meter being removed.
MG	Meter Number LDC's identification number for customer's meter.
MJ	Model Number Meter model / type, assigned by the manufacture to denote the functionality of the meter.
MR	Merchandise Type Code Type of device (meter, totalizer, recorder, channel, communication) See REF02 for valid values.
MT	Meter Ticket Number Meter Type. See REF02 for valid values.
NH	Rate Card Number Identifies the LDC's rate class or tariff that applies to the customer.
PR	Price Quote Number LDC Rate Subclass. Used to provide further classification of a rate.
QB	Press Form Identifier Phase connecting/ transformer configuration of the service -- Delta/ wye for polyphase meters. (Wye is the same as Star.) See REF02 for valid values.
QH	Replacement Assembly Serial Number

			Serial number of replacement component
			American Electrical Power Standard Number (AEP Serial Number) - AEP Meter Number of the meter being installed. REF01 codes MF and QH should be used when the AEP Meter Number is an identifier in addition to the meter number contained in REF02 when REF01 is MG. When the AEP Meter Number is the only meter number, MG should be used in REF01 instead of QH.
S3			Specification Number
			Program ID Name. Software program with which the meter is programmed.
SE			Serial Number
			Internal Meter Identifier (also known as the device ID)
SU			Special Processing Code
			Unique code identifying the special handling requirements for the claim
			Life support equipment verification. Informs the recipient as to whether the customer has any Life Support Equipment requiring electricity. See REF02 for valid values.
TA			Telecommunication Circuit Supplemental ID
			Communications Owner. See REF02 for valid values.
TF			Transfer Number
			Pending Meter Owner. Identifies the party that is anticipated to be the meter owner after customer enrollment is completed.
TP			Test Specification Number
			AEP test code
TZ			Total Cycle Number
			A complete set of events occurring in the same sequence
			Utility meter cycle number. Cycle when meter will be read.
V9			Subservicer
			Meter Owner.
VA			Vessel Agent Number
			Meter Service Provider (MSP)
VE			Vendor Abbreviation Code
			Meter Data Management Agent (MDMA)
VR			Vendor ID Number
			Meter Installer
Y7			Processing Area
			Meter Manufacturer
ZR			Supplier (Replacement)
			Number that identifies a replacement supplier typically a Commercial and Government Entity (CAGE) code, and contributes to the uniqueness of a product identification from a replacement supply source
			Billing / Metering package options.

>> REF02 127 **Reference Identification** X AN 1/30
Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier
When REF01 is 7E, TA, V9, VA, VE, or VR, valid values for REF02 are:
LDC - Utility

ESP - Energy Supplier
MDMA - Meter Demand Management Agent
CUSTOMER - Customer
OTHER

When REF01 is 9X, valid values for REF02 are:

E - Electric
G - Gas

When REF01 is FB, valid values for REF02 are:

I - Inbound
O - Outbound

When REF01 is JH, valid values for REF02 are:

A = Additive (this meter's consumption contributes to the total for the account)

B = Bi-directional (this meter records both positive and negative consumption)

I = Ignore (this meter's consumption does not contribute to the total for the account)

S = Subtractive (this meter's consumption must be subtracted from the total for the account).

When REF01 is MR, valid values for REF02 are:

D1 - Meter
D2 - Totalizer
D3 - Recorder
D4 - Channel
D5 - Communication

When REF01 is QB, valid values for REF02 are:

D - Delta
W - Wye

When REF01 is SU, valid values for REF02 are:

Y - Yes
N - No
I - If LDC is investigating information provided by ESP

When REF01 is MT, the meter type is expressed as a five-character field. The first two characters are the type of consumption; the last three characters are the metering interval reported for billing purposes. "COMBO" is used for a meter that records more than one measurement. Valid values can be a combination of the following values:

Type of Consumption -

Electric:

EA Each
K1 Kilowatt Demand (kW)
K2 Kilovolt Amperes Reactive Demand (kVAR)
K3 Kilovolt Amperes Reactive Hour (kVARH)
K4 Kilovolt Amperes (kVA)
K5 Kilovolt Amperes Reactive (kVAR)
KH Kilowatt Hour (kWh)
T9 Thousand Kilowatt Hours (MW)

Gas:

BY British Thermal Unit - (Btu)
 BZ Million BTUs (MMBtu - Dekatherms)
 EA Each (Used for Unmetered Accounts)
 HH Hundred Cubic Feet (Ccf)
 TD Therms
 TZ Thousand Cubic Feet (Mcf)

Metering Interval Reported for Billing Purposes nnn Number of minutes from 001 to 999

ANN Annual
 BIA Bi-annual
 BIM Bi-monthly
 DAY Daily
 MON Monthly
 QTR Quarterly
 TOU Time of Use

For Example:

Electric:

KHMON Kilowatt Hours Per Month
 K1015 Kilowatt Demand per 15 minute interval

Gas:

HHMON Hundred Cubic Feet Per Month
 TZDAY Thousand Cubic Feet Per Day

Other Valid Codes:

COMBO This code is used to indicate that the meter has multiple measurements, e.g., one meter that measures both kWh and Demand.

REF03	352	Description	X AN 1/80
		A free-form description to clarify the related data elements and their content	
		When REF01 = 7E, TA, V9, VA, VE, VR then REF03 should be populated with the entity's DUNS number or the word "CUSTOMER"	

		CT	Central Time	
		ET	Eastern Time	
		GM	Greenwich Mean Time	
		HT	Hawaii-Aleutian Time	
		MT	Mountain Time	
		PT	Pacific Time	
		UT	Universal Time Coordinate	
DTM05	1250	Date Time Period Format Qualifier		X ID 2/3
		Code indicating the date format, time format, or date and time format		
		D8	Date Expressed in Format CCYYMMDD	
		DD	Day of Month in Numeric Format	
			The numeric day of the month expressed using a lead zero if the number of the day is less than ten	
			When REF01 is 313, use code DD	
		DT	Date and Time Expressed in Format CCYYMMDDHHMM	
DTM06	1251	Date Time Period		X AN 1/35
		Expression of a date, a time, or range of dates, times or dates and times		
		Day of month that the meter will be read, in DD format (i.e., 01 - 28).		

Segment: **YNQ** Yes/No Question
Position: 070
Loop: HL Mandatory
Level: Detail
Usage: Optional
Max Use: >1
Purpose: To identify and answer yes and no questions, including the date, time, and comments further qualifying the condition

Syntax Notes: 1 If YNQ09 is present, then YNQ08 is required.

2 Only one of YNQ01 YNQ09 or YNQ10 may be present.

Semantic Notes: 1 YNQ02 confirms or denies the statement made in YNQ01, YNQ09 or YNQ10. A "Y" indicates the statement is confirmed; an "N" indicates the statement is denied.
 2 YNQ10 contains a free-form question when codified questions are not available.

Comments:
Notes:

YNQ~~Y~~~~~9~CELL

Data Element Summary

Ref.	Data			Attributes
<u>Des.</u>	<u>Element</u>	<u>Name</u>		
M	YNQ02	1073	Yes/No Condition or Response Code Code indicating a Yes or No condition or response N No Y Yes	M ID 1/1
>>	YNQ08	1270	Code List Qualifier Code Code identifying a specific industry code list 9 Indicator Code A specific condition applies to the contract	X ID 1/3
>>	YNQ09	1271	Industry Code Code indicating a code from a specific industry code list CELL Cellular Present Indicates whether the meter has a cellular telephone for communication. Valid for MI and MIRN JM1 Joint Meet Requested Indicates whether a joint meeting is requested at the customer's location at time of meter change - out. Valid for MDCR Request. JM2 Joint Meet Required Indicates whether a joint meeting is required at the customer's location at time of meter change - out. Valid for MDCR Response KVARH KVARH Data Required Indicates whether reactive load (kVARh) metering is required for billing the end use customer. Valid for MI and MIRN. KWHC KWHC Value Required Indicates whether pulse output is required, for example to determine compliance with interruptible rate programs. Valid for MI and MIRN. LOSS Transformer Losses Indicates whether a transformer loss adjustment applies to this site. Valid for MI and MIRN. LR Load Research Indicates whether a load research meter is	X AN 1/30

OPT	required at this site. Valid for MI. Optical Port Presents Indicates whether the meter has an optical port that allows for communication with another device. Valid for MI and MIRN.
OTHER	Other Communication Present Indicates whether the meter uses communication other than phone, cellular, or radio. Valid for MI and MIRN.
PHD	Phone (Dedicated Line) Indicates whether the phone is a dedicated line. Valid for MI and MIRN.
PHONE	Phone Presents Indicates whether the meter uses a conventional telephone line for communication. Valid for MI and MIRN.
PHS	Phone (Shared Line) Indicates whether the phone is a shared line. Valid for MI and MIRN.
POWER	Power Maintained During Installation Indicates whether power flow to the customer was maintained during installation of a new meter. Valid for MIRN.
RADIO	Radio Communication Present Indicates whether the meter has a radio communicator that passes data through radio waves. Valid for MI and MIRN.

Segment: MEA Measurements (Meter Characteristics)

Position: 100

Loop: HL Mandatory

Level: Detail

Usage: Optional

Max Use: >1

Purpose: To specify physical measurements or counts, including dimensions, tolerances, variances, and weights (See Figures Appendix for example of use of C001)

- Syntax Notes:**
- 1 If MEA05 is present, then MEA04 is required.
 - 2 If MEA06 is present, then MEA04 is required.
 - 3 Only one of MEA08 or MEA03 may be present.
 - 4 If MEA07 is present, then at least one of MEA03 MEA05 or MEA06 is required.
 - 5 At least one of MEA03 MEA05 MEA06 or MEA08 is required.

Semantic Notes: 1 MEA04 defines the unit of measure for MEA03, MEA05, and MEA06.

Comments: 1 When citing dimensional tolerances, any measurement requiring a sign (+ or -), or any measurement where a positive (+) value cannot be assumed, use MEA05 as the negative (-) value and MEA06 as the positive (+) value.

Notes: Use this occurrence of the "MEA" segment to report characteristics of the installed meter.

Scenario 1:

If a meter has multiple registers that have the same value for the quantity begin reported, the quantity may be reported using MEA02 and MEA03, and MEA04 if needed. Example: Meter with five dials per register - MEA~~QUR~5

Scenario 2:

If multiple registers have different values for the quantity being reported, MEA07 and MEA09 should be used to distinguish between the registers.

Example: A meter with five dials to represent total energy use and four dials to represent on-peak demand -

MEA~~QUR~5~~~~51~~R1 (5 Dials, Total, kWh)

MEA~~QUR~4~~~~42~~R2 (4 Dials, On Peak, kW)

Example: Number of wires / Number of phases

MEA~~35~3\

MEA~~36~3\

Data Element Summary

Ref.	Data Element	Name	Attributes
>>	MEA02	738 Measurement Qualifier	O ID 1/3
		Code identifying a specific product or process characteristic to which a measurement applies	
		35 Number of Living Units	
		36 Number of Phases	
		MEF Meter Factor	

	as shown on the face plate (2.5 TA, 30 TA, etc.) Valid for MI and MIRN.
MU	Multiplier Meter constant or meter multiplier. Billed Usage = (Ending Meter Reading - Beginning Meter Reading) * Meter Multiplier. Valid for MI and MIRN.
NA	Number per Package Number of channels on the recorder. Valid for MI and MIRN.
NB	Number per Bundle PT Quantity. Number of voltage or potential transformers associated with the meter at the site. Valid for MI and MIRN.
NC	Number per Coil Group CT Quantity. Number of current transformers associated with the meter at the site. Valid for MI and MIRN.
PJ	Pulse Width The time between the specified reference points on the leading and trailing edges of a pulse Pulse Multiplier. The factor used on solid-state meters to convert pulses of energy to kilowatt usage per hour (also known as the pulse constant). Formula (for meters with Ke values): Billing Constant x Ke / 1000 = Pulse Multiplier. Valid for MI and MIRN.
QC	Quantity or Loading Maximum Meter class, (maximum current rating, in amps,) indicated on the faceplate of the meter. Valid for MI and MIRN.
QUR	Reportable Quantity Number of dials on the meter displayed as X.Y. Number of dials (or segments) on a mechanical meter, or number of display segments and decimals on a solid-state meter. Valid for MI and MIRN.
RB	Range Value Customer's maximum demand (kW), expressed as a specific value in MEA03 or as a range (e.g., 0-50, 50-200, 200-500, or >500 kW) from a lower limit in MEA05 to an optional upper limit in MEA06. Valid for MI.
RR	Reduction Ratio Register constant (Dial K). A multiplier applied to meter display to obtain total registration. Valid for MI and MIRN.
RY	Ratio Register ratio. The number of revolutions of the gear meshing with the worm or pinion on the rotating element for one resolution of the first dial pointer. Valid for MI and MIRN.
T3	Technical Meter Ke. Programmed constant value or weight of the meter/ recorder pulse in watt-hours per meter pulse found in the meter software. Valid for MI and MIRN.
UG	Usage

				Meter Kh, disk constant. Watt-hours per disk revolution. Valid for MI and MIRN.
			VO	Voltage
				Meter voltage. Voltage on faceplate of meter. Valid for MI and MIRN.
			VSO	Volume Split to Others
				Service voltage. Voltage of the meter site. Valid for MI and MIRN.
>>	MEA03	739	Measurement Value	X R 1/20
			The value of the measurement	
	MEA04	C001	Composite Unit of Measure	X
			To identify a composite unit of measure (See Figures Appendix for examples of use)	
			This is a composite data element, please populate C00401	
M	C00101	355	Unit or Basis for Measurement Code	M ID 2/2
			Code specifying the units in which a value is being expressed, or manner in which a measurement has been taken	
			1N	Count
				Indicates meter pulses
			68	Ampere
			70	Volt
			K1	Kilowatt Demand
				Represents potential power load measured at predetermined intervals
	MEA05	740	Range Minimum	X R 1/20
			The value specifying the minimum of the measurement range	
			Lower limit of range for customer's maximum demand, for MEA02 = RB.	
	MEA06	741	Range Maximum	X R 1/20
			The value specifying the maximum of the measurement range	
			Upper limit of range for customer's maximum demand, for MEA02 = RB.	
	MEA07	935	Measurement Significance Code	O ID 2/2
			Code used to benchmark, qualify or further define a measurement value	
			41	Off Peak
			42	On Peak
			43	Intermediate (mid peak)
			45	Summer On Peak
			49	Winter On Peak
			50	Winter Mid Peak
			51	Total
			52	Winter Super Off Peak
			57	Summer
			58	Winter
			63	Peak - 2
			64	Peak - 3
			65	Peak - 4
			67	Non Time-Related Demand
			71	Summer Super On Peak
			72	Summer Super Off Peak
			73	Summer Off Peak
			74	Summer Mid Peak
			75	Winter Off Peak
			76	Summer On Peak 2
			77	Winter On Peak 2
			78	Summer Mid Peak 2
			79	Winter Mid Peak 2
	MEA09	752	Surface/Layer/Position Code	O ID 2/2

Code indicating the product surface, layer or position that is being described

R1	Relative Position 1 Applies to kWh data
R2	Relative Position 2 Applies to kW data
R3	Relative Position 3 Applies to kVARh data
R4	Relative Position 4 Applies to kVAR data

Segment: **MEA** **Measurements (Meter Reads)**
Position: 100
Loop: HL Mandatory
Level: Detail
Usage: Optional
Max Use: >1
Purpose: To specify physical measurements or counts, including dimensions, tolerances, variances, and weights (See Figures Appendix for example of use of C001)

- Syntax Notes:**
- 1 If MEA05 is present, then MEA04 is required.
 - 2 If MEA06 is present, then MEA04 is required.
 - 3 Only one of MEA08 or MEA03 may be present.
 - 4 If MEA07 is present, then at least one of MEA03 MEA05 or MEA06 is required.
 - 5 At least one of MEA03 MEA05 MEA06 or MEA08 is required.

Semantic Notes: 1 MEA04 defines the unit of measure for MEA03, MEA05, and MEA06.

Comments: 1 When citing dimensional tolerances, any measurement requiring a sign (+ or -), or any measurement where a positive (+) value cannot be assumed, use MEA05 as the negative (-) value and MEA06 as the positive (+) value.

Notes: Use this occurrence of the "MEA" segment to report Opening and Closing meter reads associated with meter installation and maintenance.

MEA~R2~~~KH~~2163~42\

Data Element Summary

Ref.	Data			
<u>Des.</u>	<u>Element</u>	<u>Name</u>		<u>Attributes</u>
MEA01	737	Measurement Reference ID Code		O ID 2/2
		Code identifying the broad category to which a measurement applies		
		BA	Base Point	
			Supplemental mechanical read	
		R1	Opening Reading	
		R2	Closing Reading	
			Actual meter reading of meter being removed	
MEA04	C001	Composite Unit of Measure		X
		To identify a composite unit of measure (See Figures Appendix for examples of use)		
		This is a composite data element, please populate C00401		
M	C00101	355 Unit or Basis for Measurement Code		M ID 2/2
		Code specifying the units in which a value is being expressed, or manner in which a measurement has been taken		
		1N	Count	
			Indicates meter pulses	
		70	Volt	
		BY	British Thermal Unit (BTU)	
			BTU	
		CF	Cubic Feet	
		EA	Each	
		GA	Gallon	
		HH	Hundred Cubic Feet	
			Ccf	
		K1	Kilowatt Demand	
			Represents potential power load measured at predetermined intervals	
			kW	
		K2	Kilovolt Amperes Reactive Demand	
			Reactive power that must be supplied for specific types of customer's equipment; billable when	

			kilowatt demand usage meets or exceeds a defined parameter
			kVAR
	K3		Kilovolt Amperes Reactive Hour Represents actual electricity equivalent to kilowatt hours; billable when usage meets or exceeds defined parameters
			kVARH
	K4		Kilovolt Amperes Measure of electrical power
			kVA
	K5		Kilovolt Amperes Reactive Measure of electrical power
			kVAR
	KH		Kilowatt Hour
			kWh
	LB		Pound
	TD		Therms
	TZ		Thousand Cubic Feet
			Mcf
MEA06	741	Range Maximum	X R 1/20
			The value specifying the maximum of the measurement range
			Meter Read
MEA07	935	Measurement Significance Code	O ID 2/2
			Code used to benchmark, qualify or further define a measurement value
	10		Not equal to (Empty - no value s being sent)
	41		Off Peak
	42		On Peak
	43		Intermediate (mid peak)
	45		Summer On Peak
	49		Winter On Peak
	50		Winter Mid Peak
	51		Total
	52		Winter Super Off Peak
	57		Summer
	58		Winter
	63		Peak - 2
	64		Peak - 3
	65		Peak - 4
	67		Non Time-Related Demand
	71		Summer Super On Peak
	72		Summer Super Off Peak
	73		Summer Off Peak
	74		Summer Mid Peak
	75		Winter Off Peak
	76		Summer On Peak 2
	77		Winter On Peak 2
	78		Summer Mid Peak 2
	79		Winter Mid Peak 2

Segment: **NM1 Individual or Organizational Name**
Position: 190
Loop: NM1 Optional
Level: Detail
Usage: Optional
Max Use: 1
Purpose: To supply the full name of an individual or organizational entity
Syntax Notes: 1 If either NM108 or NM109 is present, then the other is required.
Semantic Notes: 1 NM102 qualifies NM103.
Comments: 1 NM110 and NM111 further define the type of entity in NM101.
Notes: Used for looping

Data Element Summary

Ref.	Data Element	Name	Attributes
M	NM101	98 Entity Identifier Code Code identifying an organizational entity, a physical location, property or an individual MQ Metering Location Used for looping	M ID 2/3
M	NM102	1065 Entity Type Qualifier Code qualifying the type of entity 3 Unknown The entity name is not segmented and will be transmitted in NM103 only.	M ID 1/1
	NM103	1035 Name Last or Organization Name Individual last name or organizational name	O AN 1/35

Segment: **COM** Communication Contact Information
Position: 230
Loop: NM1 Optional
Level: Detail
Usage: Optional
Max Use: >1
Purpose: To specify a communication contact number
Syntax Notes:
Semantic Notes:
Comments:
Notes: COM~TE~8005551234

Data Element Summary

	<u>Ref.</u>	<u>Data</u>	<u>Name</u>	<u>Attributes</u>
	<u>Des.</u>	<u>Element</u>		
M	COM01	365	Communication Number Qualifier Code identifying the type of communication number TE Telephone Meter Communication telephone number	M ID 2/2
M	COM02	364	Communication Number Complete communications number including country or area code when applicable	M AN 1/80

Segment: **SE** Transaction Set Trailer
Position: 290
Loop:
Level: Detail
Usage: Mandatory
Max Use: 1
Purpose: To indicate the end of the transaction set and provide the count of the transmitted segments (including the beginning (ST) and ending (SE) segments)

Syntax Notes:

Semantic Notes:

Comments: 1 SE is the last segment of each transaction set.

Notes:

SE~28~000000001

Data Element Summary

	<u>Ref.</u> <u>Des.</u>	<u>Data</u> <u>Element</u>	<u>Name</u>	<u>Attributes</u>
M	SE01	96	Number of Included Segments Total number of segments included in a transaction set including ST and SE segments	M NO 1/10
M	SE02	329	Transaction Set Control Number Identifying control number that must be unique within the transaction set functional group assigned by the originator for a transaction set	M AN 4/9