

JAPAN ELECTRICITY MARKET LANDSCAPE REPORT

April 2019



Publisher Information

JAPAN ELECTRICITY LANDSCAPE & REPORT

Copyright © 2019 by Skipping Stone

All rights reserved. No part of this book may be reprinted or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system, without prior written permission of the copyright owner and publisher.

Trademarked names may be used in this book. Rather than use a trademark symbol with every occurrence of a trademarked name, we use the names only in editorial fashion and to the benefit of the trademark owner with no intention of infringement of the trademark.

The information in this book is distributed on an “as is” basis, without warranty. Although every precaution has been taken in the preparation of this work, neither the authors nor the publisher shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused either directly or indirectly by the information contained herein.

Authors

Peter Weigand

Nancy Young

Shuichi Kishida

Table of Contents

1	Introduction	5
2	Executive Summary	6
3	Japan Electric Reform & Deregulation Landscape Post WWII	8
3.1	Electric Power Market Structure	8
3.2	Retail Mass Market (low voltage)	10
3.3	Wholesale Market (JEPX)	11
4	Retail Electric Market Liberalization	12
4.1	Key Legislation	12
4.2	Key Regulatory and Industrial Agencies	13
4.3	Electric Retailers Sector	14
4.3.1	Top 25 Overall Retailers	15
4.4	Two Types of Retail Market Customers – Low Voltage and High Voltage	16
4.5	Balancing Pool Model Pre-Liberalization	16
4.5.1	Balancing Group Model Post Liberalization	17
4.5.2	Balancing Pool Competition	18
4.6	Enhanced Services for Electric Retailers	18
5	Japan Electric Utilities & the Electricity Market	19
5.1	Generation Assets Overview	19
5.2	Impact of “3.11” on Generation	21
5.3	Electricity Sales	22
5.4	Natural Gas Utilization and Import Statistics	24
5.5	Renewable Energy	25
6	Wholesale Market Liberalization	28
6.1	Wholesale Market (JEPX)	28
6.2	Over the Counter & Futures Market	30
6.3	Legal Utility Unbundling and OCCTO	30
6.4	OCCTO – METI – Surveillance Commission	32
7	Demand-Side Management	34
7.1	Smart Community Pilots	34
7.2	HEMS, MEMS and BEMS Programs	35
	Appendix A: Selected Organizations, Associations & Publications	38
	Appendix B: Wholesale Market (JEPX) Member Companies	41
	About Skipping Stone	43

Table of Figures

Figure 3-1: Japan's Power Grid	8
Figure 3-2: Japan's Retail Market Reform 2000 to 2005 Source: METI	9
Figure 3-3: Electricity Supply System as of 2014 Source: METI	10
Figure 3-4: Electric Supply System as of April 2016 Source: FEPC Library	11
Figure 4-1: Timeline for Reform (2016)	12
Figure 4-2: Electric Retailers (PPS) Market Share Landscape	16
Figure 4-3: Pre-liberalization balancing systems	17
Figure 4-4: Balancing Group Model	18
Figure 5-1: Major Power Plants by Generation Type. Jan 2018	19
Figure 5-2: Electricity Generation Source (TWh)	20
Figure 5-3: Japan's Electricity Grid	21
Figure 5-4: Location and Status of Japan's Nuclear Power Plants	22
Figure 5-5: Tokyo Household monthly invoice increase from March 2004 to March 2014	23
Figure 5-6: Comparison of Rate Increases for Electric Power to other public services (Tokyo Metropolitan)	23
Figure 5-7: Progression of Japan Gas Market Liberalization	24
Figure 5-8: Expansion of Renewable Energy Facilities	25
Figure 6-1: Spot Market - 13,000kWh sold by Participate C to Participate A & B, ¥8.50 14:00-14:30	29
Figure 6-2: Guaranteeing Impartial Access to Transmission and Distribution	30
Figure 6-3: New Structure Source: METI	31
Figure 6-4: OCCTO - Nationwide Electric System Coordinator	31

List of Tables

Table 3-1: Electricity Market Structure Before 2016 Source: Bloomberg New Energy Finance	9
Table 4-1: OCCTO Report on Switching Support Systems as of 1.31.2019	14
Table 4-2: Top 25 Overall Retailers	15
Table 5-1: Total Numbers by Type	20
Table 5-2: FiT Program Pricing updated 2018	26
Table 5-3: Newly installed generation capacity	27
Table 7-1: Japan Smart Community Projects	35
Table 7-2: Demand-Side Management Programs Funded by METI	36
Table 7-3: Smart Meter Annual and Cumulative Installation Projection Source: METI EGC	36
Table 7-4: BEMS METI Funded Demand Response Program	37