

2024年度中国电力市场 发展报告

二〇二五年六月

指导单位

国家能源局市场监管司

编制单位

电力规划设计总院

支持单位

国家电力调度控制中心

北京电力交易中心有限公司

中国南方电网市场营销部

中国南方电网电力调度控制中心

广州电力交易中心有限责任公司

内蒙古电力调控公司

内蒙古电力交易中心有限公司

前 言

2024 年是全面贯彻落实党的二十届三中全会“建设全国统一电力市场”部署的关键之年。这一年，电力市场建设取得重要阶段性进展，省间现货市场和山东、甘肃现货市场转入正式运行，省级现货市场建设进入提速扩围新阶段；南方区域电力市场实现整月结算试运行，长三角建立省市间电力互济交易机制；绿电市场实现全覆盖；电力市场运行基本规则、电力市场信息披露、市场注册等基础规则相继出台，多层次多品类多功能多主体电力市场体系初步建立。

为全面总结 2024 年我国电力市场建设进展和成效，国家能源局市场监管司指导电力规划设计总院，在相关单位支持下编制了《2024 年度中国电力市场发展报告》。报告系统梳理了 2024 年全国统一电力市场建设的创新实践与丰硕成果，全景展现各地市场建设动态，提出 2025 年电力市场建设重点。本报告既是能源行业践行党中央、国务院决策部署的阶段性答卷，也是新征程上深化改革、推动电力市场高质量发展的行动参考。

2025 年是“十四五”规划收官之年，也是能源法实施开局之年。展望 2025 年，全国统一电力市场将初步建成。我们期待以此为载体，凝聚各方共识，破解改革难题，推动电力市场向着统一、高效与可持续的未来迈进，为构建清洁低碳、安全高效的新型能源体系提供更强支撑！

目 录

一、2024 年电力市场概览	01
（一）电力供需情况	01
（二）经营主体情况	03
（三）交易量价情况	03
二、2024 年电力市场进展成效回顾	11
（一）市场体系加速构建，层次多维架构健全	12
（二）市场机制不断完善，衔接方式迭代优化	20
（三）规则体系初步完善，制度基础有效夯实	26
（四）能源转型持续推进，绿证绿电放量增长	28
（五）市场信号精准引导，保供稳价作用凸显	31
（六）零售市场稳步扩容，交易电量稳中有增	33
（七）新型主体蓬勃发展，业态类型加快丰富	35
（八）监管体系持续健全，市场治理逐步规范	37
三、2025 年电力市场建设重点	41
四、大事记	43

一、2024 年电力市场概览

(一) 电力供需情况

2024 年，全国累计发电装机容量达 33.49 亿千瓦，新增发电装机容量 4.29 亿千瓦；其中，风光新增发电装机 3.58 亿千瓦，累计达 14.07 亿千瓦，同比增长 33.9%。

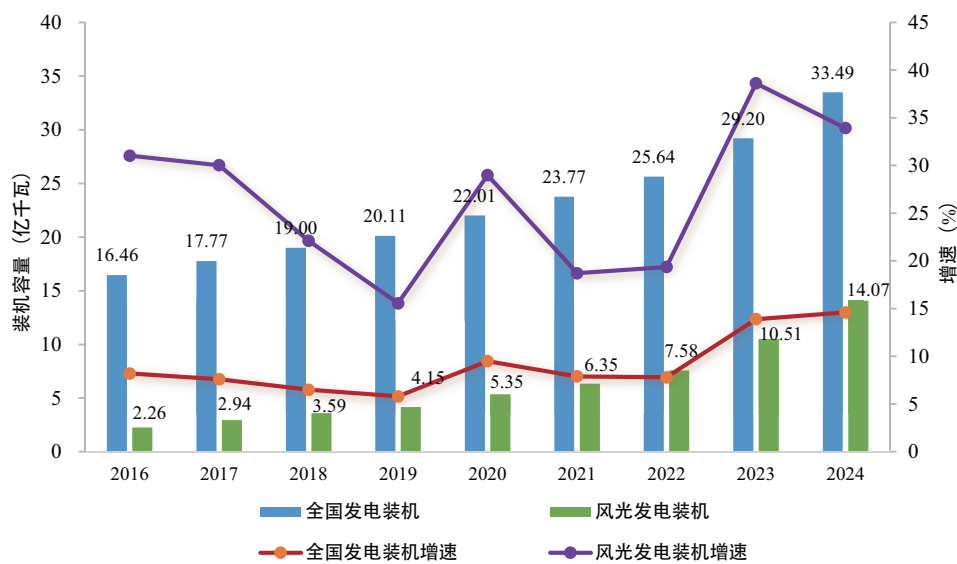


图 1 2016—2024 年全国发电装机情况

2024 年，全国发电量 10.09 万亿千瓦时，同比增长

6.7%；其中，风光新增发电量 3660 亿千瓦时，占总新增发电量的 58.1%，达到 1.83 万亿千瓦时。

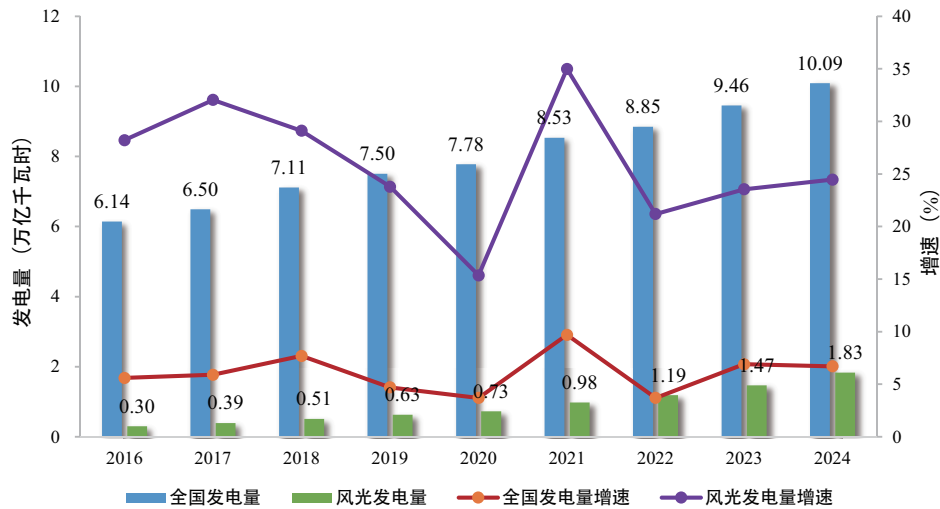


图 2 2016—2024 年全国发电量情况

2024 年，全国全社会用电量达 9.85 万亿千瓦时，同比增长 6.8%，2016—2024 年年均增速 6.6%。

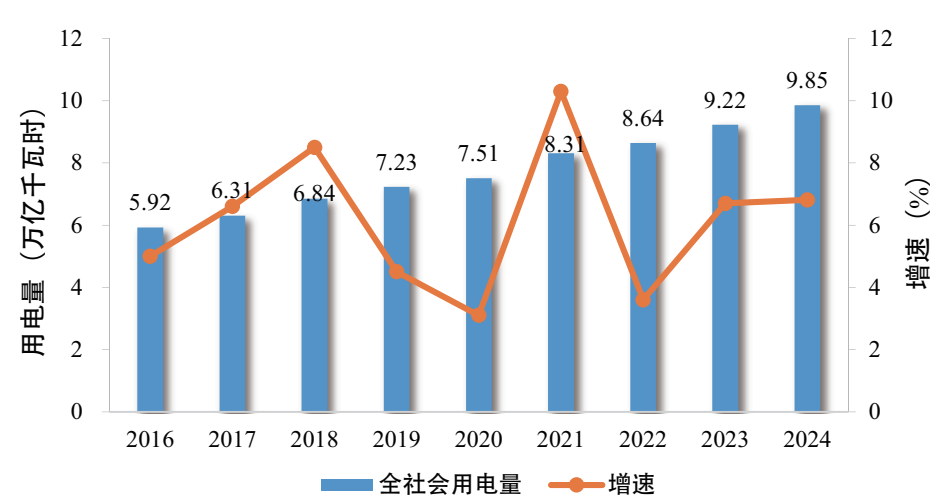


图 3 2016—2024 年全国全社会用电量情况

（二）经营主体情况

各类经营主体数量稳步增加，市场参与度不断提升。2024 年全国电力市场经营主体数量 81.6 万家，同比增长 8.9%。其中，发电企业 3.5 万家，电力用户 77.7 万家，售电公司 4409 家。发电侧燃煤机组全部进入市场，超过半数的新能源及部分燃气发电、核电和水电参与市场；用户侧除居民、农业用户外全部工商业用户进入市场。

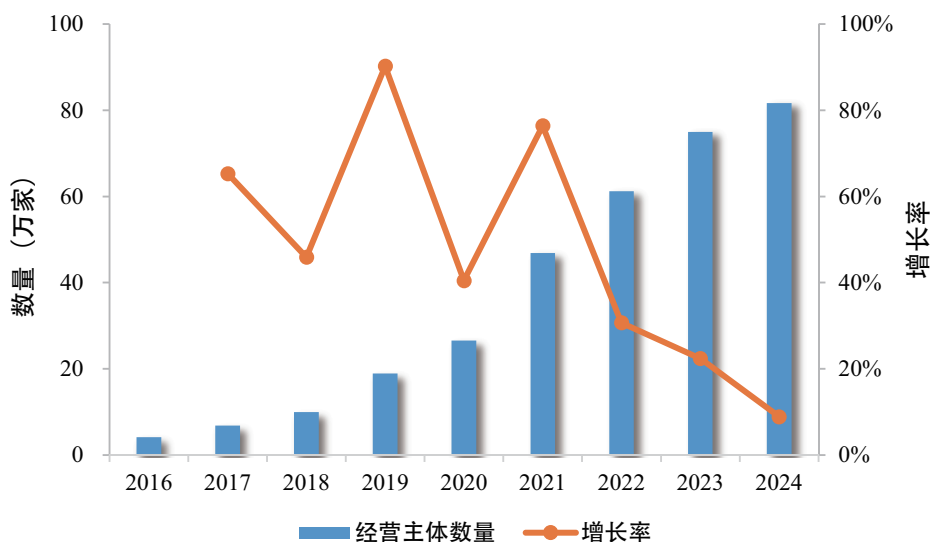


图 4 2016—2024 年电力市场经营主体数量情况

（三）交易量价情况

1. 全国总体水平

全国市场化交易电量持续增长。2024 年，全国市场化交

易电量 6.18 万亿千瓦时，同比增长 9.0%；占全社会用电量 62.7%，同比提升 1.3 个百分点，连续三年超过 60%；新能源市场交易电量 9569 亿千瓦时，占新能源发电量的 52.3%。

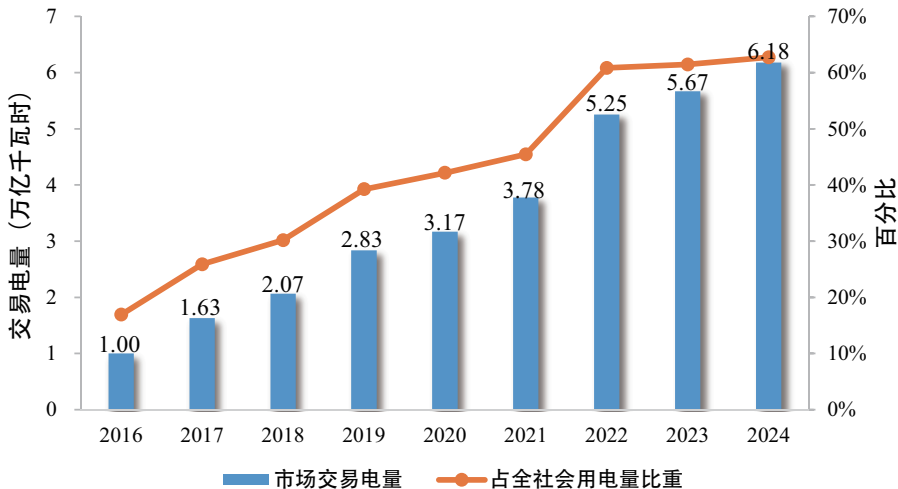


图 5 2016—2024 年全国市场化交易电量及占全社会用电量比重

分月来看，单月市场交易最大规模出现在 7 月份，达 6035 亿千瓦时；市场交易最小规模出现在 2 月份，达 4161 亿千瓦时。

分经营区来看，国家电网经营区内各电力交易中心累计组织完成市场交易电量 4.72 万亿千瓦时，同比增长 6.3%，其中省间交易电量 1.17 万亿千瓦时；南方电网经营区内各电力交易中心累计组织完成市场交易电量 1.14 万亿千瓦时，同比增长 22.1%，其中省间交易电量 0.26 万亿千瓦时；内蒙古电力交易中心累计组织完成市场交易电量 0.32 万亿千瓦时，同比增长 9.1%。

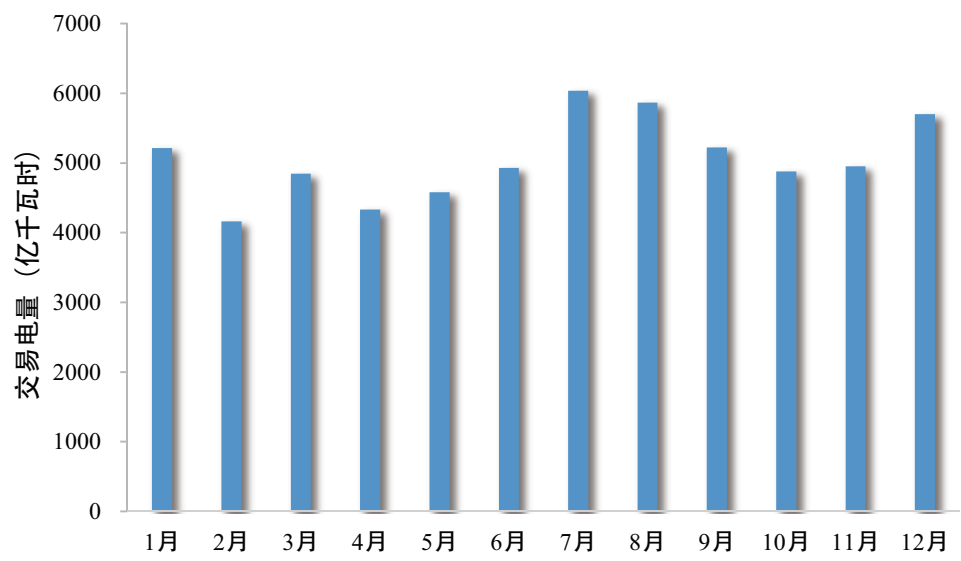


图 6 2024 年全国中长期交易分月电量

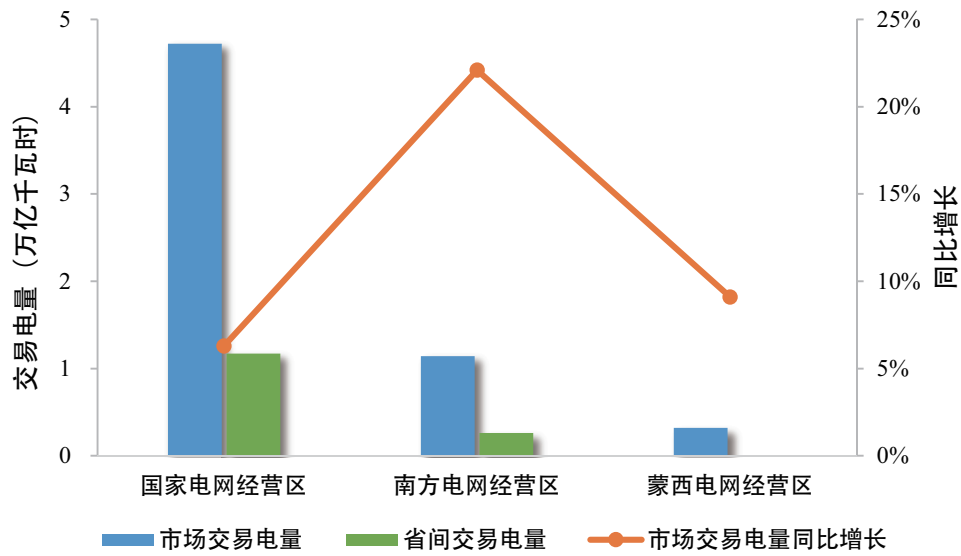


图 7 分经营区交易规模

2. 跨省跨区交易

跨省跨区中长期交易规模持续扩大。2024 年，全国跨省跨区中长期交易电量合计 1.39 万亿千瓦时，同比增长 19.8%。

省间电力现货交易活跃。2024 年，省间电力现货总成交电量为 376.31 亿千瓦时，成交加权平均价为 0.412 元 / 千瓦时。湖北卖出电量最多，占总成交量约 17.16%。买方总成交电量为 341.17 亿千瓦时，成交加权平均价为 0.573 元 / 千瓦时。浙江、四川买入电量最多，分别占总购入成交电量的 34.12%、23.73%。

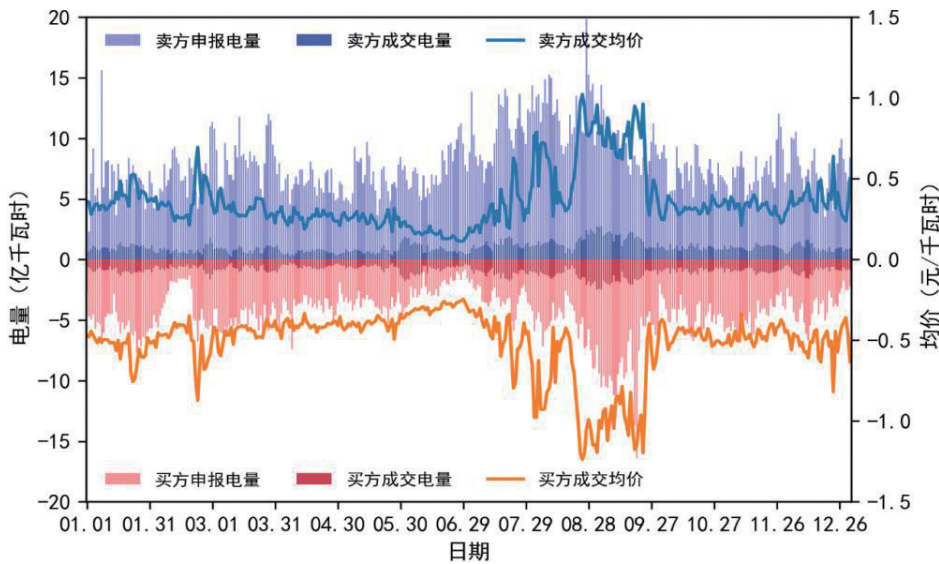


图 8 2024 年省间电力现货成交量价

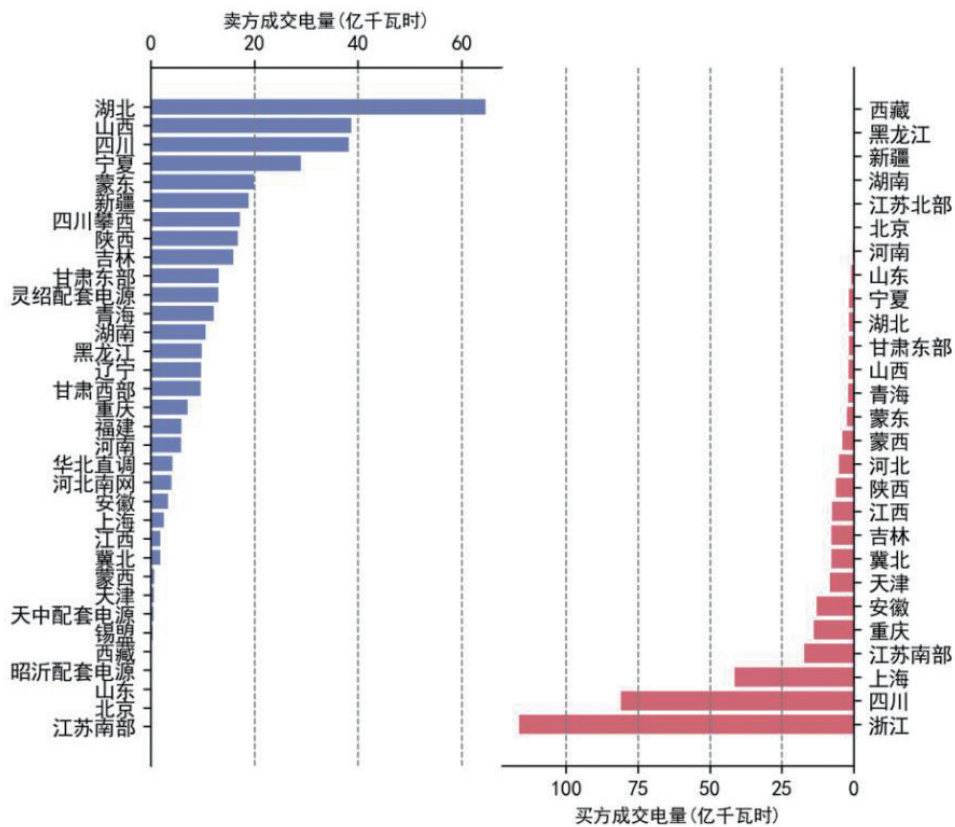


图 9 2024 年省间现货分省成交电量

3. 省内市场交易

省内中长期交易电量总体增长。2024 年，全国各省级电力交易中心交易电量合计为 4.75 万亿千瓦时，同比增长 5.4%。其中，省内电力直接交易 4.55 万亿千瓦时（含绿色电力交易 0.20 万亿千瓦时）、发电权交易 0.20 万亿千瓦时、其他交易 49.4 亿千瓦时。

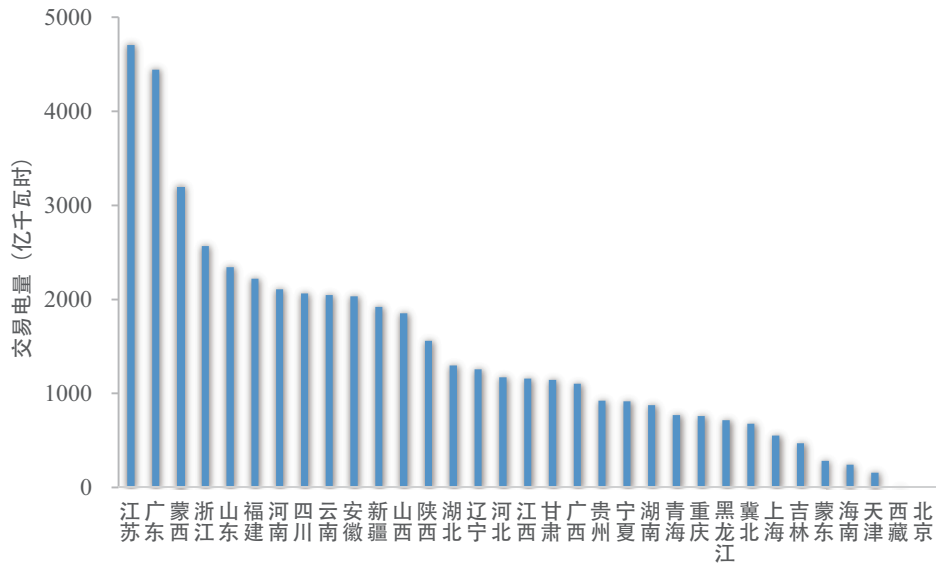


图 10 2024 年各地中长期交易电量

各地中长期交易价格差异明显。2024 年，各地中长期交易均价在 0.231—0.505 元 / 千瓦时之间，较当地煤电基准价平均高出 4.7%，其中 23 个省（区、市）/ 地区高于当地煤电基准价，9 个省（区、市）/ 地区低于当地煤电基准价。

现货价格普遍低于中长期。2024 年已转正式运行的山西、广东、山东、甘肃电力现货市场，日前市场均价分别为 0.314、0.347、0.316、0.249 元 / 千瓦时，山西高于中长期交易均价 1.1%，广东、山东、甘肃分别低于中长期交易均价 22.7%、14.3%、9.8%；实时市场均价分别为 0.324、0.341、0.310、0.269 元 / 千瓦时，山西高于中长期交易均价 4.2%，广东、山东、甘肃分别低于中长期交易均价 24.1%、16.1%、2.6%。

一、2024 年电力市场概览

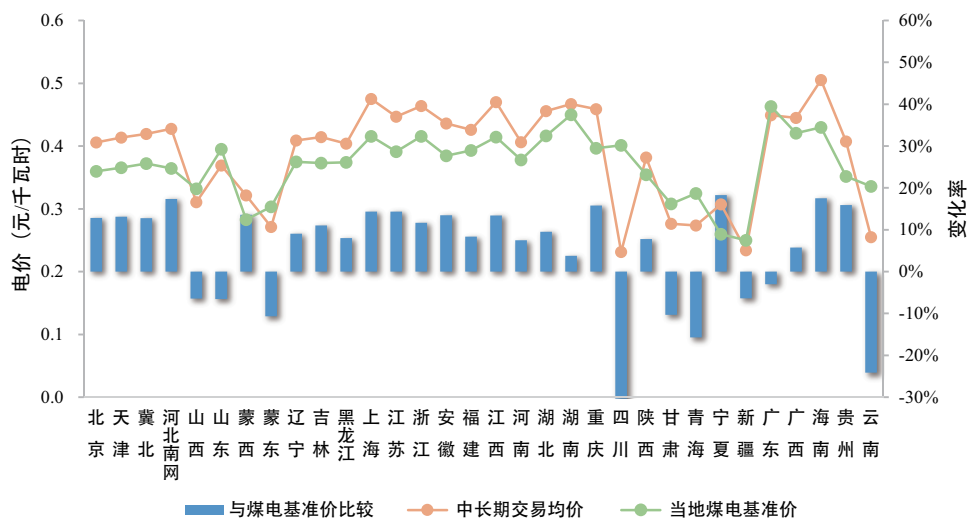


图 11 2024 年各地电力中长期交易均价

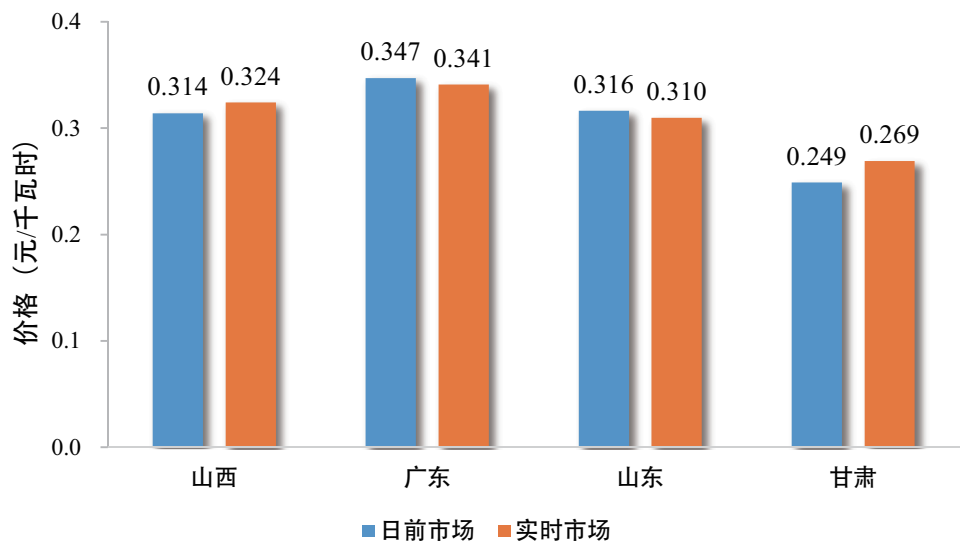


图 12 2024 年山西、广东、山东、甘肃电力现货市场价格情况

电网代理购电各地量价差异较大。2024 年，全国电网代理购电量 1.84 万亿千瓦时，其中优先发电量 0.88 万亿千

瓦时，市场化采购电量 0.96 万亿千瓦时；全国电网代理购电均价 0.426 元 / 千瓦时，各地电网代理购电均价在 0.250—0.505 元 / 千瓦时之间。

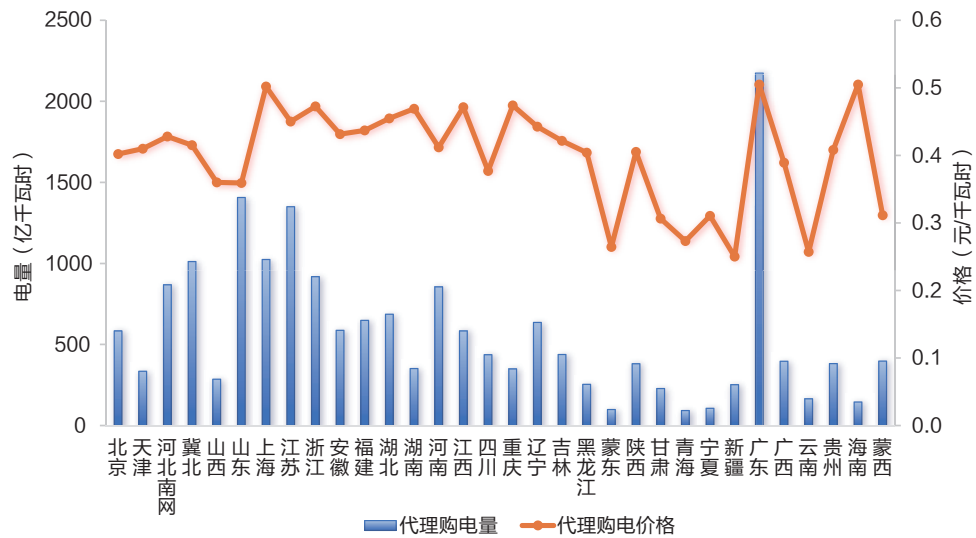


图 13 2024 年各地电网代理购电量价情况

二、2024 年电力市场进展成效回顾

2024 年，我国电力市场建设取得积极进展和明显成效。多层次多品类多功能多主体电力市场体系初步建立，电力中长期、现货、辅助服务市场机制持续优化，“1+6”基础规则体系初步完善，全国统一电力市场建设加快推进；中长期市场保供稳价功能持续发挥，现货市场引导供需高效调节，辅助服务市场新品类尝试助推电力系统稳定运行；绿电绿证交易规模大幅增长，绿色环境价值有效体现，电力市场促进低碳转型作用充分发挥；零售市场稳步发育，新型储能、虚拟电厂等新业态加速发展，为新型电力系统建设注入新动能；电力市场监管体系持续健全，有效推动电力市场规范运行，为全国统一电力市场建设提供有力支撑。

（一）市场体系加速构建，层次多维架构健全

1. 跨省跨区市场持续推进

省间电力现货市场正式运行。省间电力现货市场是在跨省跨区电力中长期市场交易基础上，利用跨省区通道可用输电能力开展的日前、日内现货交易。2024 年 10 月 15 日，省间电力现货市场转入正式运行。自 2022 年 1 月试运行以来，省间电力现货市场范围由点到面、持续扩大，目前已覆盖国家电网和蒙西电网经营区全域，有力促进了省间电力互济、电力保供和清洁能源消纳。试运行期间省间电力现货市场参与主体超 6000 个，覆盖多类型发电主体，累计交易电量超过 880 亿千瓦时，其中清洁能源电量占比达 44%。

专栏 1 省间现货市场保供应促转型成效显著

2024 年，省间现货市场累计成交电量 376 亿千瓦时，同比增加 18%；成交均价 0.412 元/千瓦，较省间中长期均价高 0.035 元/千瓦。

省间现货市场分时价格波动有效反映电力供需形势，在保供应、促转型方面成效显著。保供应方面，现货市场通过高峰高价有效激励各类电源顶

峰发电。2024 年度夏期间，省间现货最大互济电力 1616 万千瓦，特别是 8—9 月川渝极端高温大负荷期间，省间现货实现精准跨区支援互济，有效缓解了川渝等地区供电紧张局面。促转型方面，省间现货有效促进新能源大范围消纳。2024 年，新能源通过省间现货成交电量 98 亿千瓦时、同比增长 20%，提升新能源利用率 0.6 个百分点。

跨省跨区中长期交易制度进一步完善。《北京电力交易中心跨区跨省电力中长期交易实施细则（2024 年修订稿）》于 2024 年 7 月 1 日起正式实施，实施细则围绕中长期市场连续运营、促进新能源消纳、保障系统安全等关键内容，进一步健全交易机制、优化业务流程，创新开展省间多通道集中优化交易，提升资源大范围优化配置效率。广州电力交易中心 2024 年 4 月印发《南方区域跨区跨省电力中长期交易规则》，进一步规范南方区域跨区跨省电力中长期交易，推动落实国家西电东送战略，促进清洁能源消纳，推进建设统一开放、竞争有序的南方区域电力市场。覆盖国家电网、南方电网、蒙西电网的跨经营区灵活互济交易机制初步建立，2024 年开展云霄直流国家电网、南方电网灵活互济交易，在年度市场已达成广东送福建 60 万千瓦交易的基础上，通

过月度、月内交易，度夏晚高峰时段广东增送福建 140 万千瓦，首次实现云霄直流南方电网送国家电网 200 万千瓦满送。度夏期间，蒙西电网首次通过省间中长期交易从国家电网经营区购电。

南方区域电力市场加速推进。南方区域电力市场涵盖广东、广西、云南、贵州、海南五省（区），形成区域内统一的中长期、现货和辅助服务市场基本框架体系。2024 年全年完成 5 轮累计 53 天结算试运行，11 月首次实现整月结算试运行。试运行期间，全月全网发电侧日前出清加权均价 0.315 元 / 千

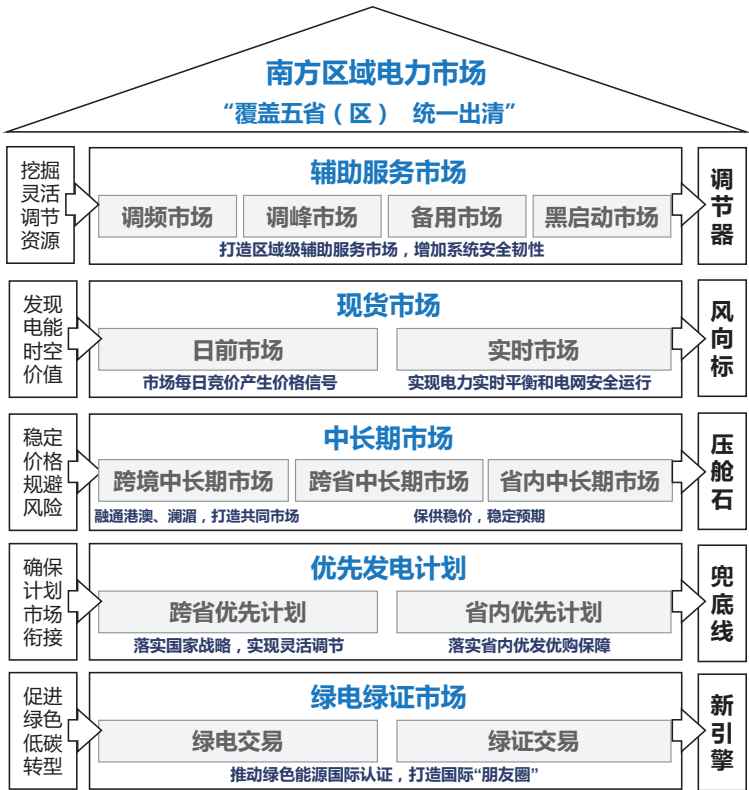


图 14 南方区域市场体系架构图

瓦时，逐日价格走势与市场供需趋势一致，通过区域现货市场实现省间增送电量 31 亿千瓦时。

专栏 2 南方区域电力市场建设取得重要进展

2024 年南方区域电力市场注册经营主体突破 20 万家，市场化电量占售电量比重达 72.5%；西电东送电量 2384 亿千瓦时，创历史新高。

市场建设持续推进。统筹区域协同与省内特色，按照相对独立、相互衔接的原则制定区域和省（区）内配套实施细则，形成“1+N+5X”系列规则。充分发挥资源配置作用，在落实跨省跨区优先发电计划基础上，开展跨省跨区市场化交易，促进省间余缺调剂和清洁能源消纳；省内市场更好发挥基础性保障作用，助力地方电力经济社会发展。辅助服务市场覆盖调频、备用、调峰等多品种。

技术攻坚取得突破。成功研发电力求解器“天权”，列入国家能源局首台套重大技术装备清单，打破国外技术垄断，支撑起全球最大规模区域现货市场运算需求，实现五省（区）6000 余节点每 15 分钟动态出清。

长三角电力市场平稳起步。2024 年 7 月 1 日，长三角电力市场正式启动，构建“电力互济、错峰互补、容量互备、供需互动”的省市间电力互济市场化机制，覆盖了上海、江苏、浙江、安徽和福建四省一市，启动新增富余需求侧资源互济交易、富余新能源消纳互济交易等交易品种，充分挖掘区域内发用两侧资源，进一步提升长三角电力保障供应和新能源消纳能力。2024 年迎峰度夏期间，华东区域最高用电负荷六创历史新高，达到 4.21 亿千瓦，同比增长 12.4%。长三角电力市场有效缓解高峰时段供电紧张局面，助力地方电力保供。

专栏 3 长三角电力市场保供应促转型发挥积极作用

长三角电力市场立足于省市间电力互济交易，以经济有效的市场化手段，保障各省市高峰时段的电力供应平衡，促进新能源跨省消纳，为长三角电力一体化发展筑牢根基，取得初步成效。

2024 年，省市间互济保供电力最高达 1041 万千瓦，为浙、皖、沪、苏分别提供省外错峰最大支援电力 526、200、735、653 万千瓦；互济调峰电力最高达 1066 万千瓦，支援浙、皖、沪、苏、

闽最大调节电力分别为 230、500、50、677、100 万千瓦，全年减少弃风弃光电量 14 亿千瓦时。

需求侧资源跨省互济作为长三角电力市场省市间互济的关键品种，在迎峰度夏期间利用各省市高峰负荷出现的时间不同，实现小时级的错峰互济支援。2024 年 7 月 22 日和 7 月 31 日，长三角富余需求侧可调节资源互济交易 2 次启动，共有 47 家经营主体参加，累计成交电力 36.1 万千瓦。

西北、华中（东四省）区域省间互济稳妥推进。西北区域创新开展中长期跨省弹性交易，通过“能量换容量”有效支援青海迎峰度夏、度冬保供电量分别为 17.6、21.7 亿千瓦时，支援陕西高峰时段最大电力 130 万千瓦，有效应对大负荷考验，充分发挥西北区域省间余缺互济和资源优化配置作用。华中（东四省）持续完善“点对网”交易模式，以短周期常态化连续开市交易模式促进华中区域可再生能源消纳和电力供应保障，全年成交电量 28.64 亿千瓦时，最大互济电力 110 万千瓦，实现电力资源在更大范围内共享互济。

2. 省内市场建设进入快车道

截至 2024 年底，山西、广东、山东、甘肃 4 个省级现货市场转入正式运行；蒙西、湖北、浙江、福建 4 个省级现货市场开展连续不间断结算试运行；四川、安徽、陕西、辽宁、重庆、湖南、宁夏、江苏、河北南网等 9 个省级现货市场已完成整月以上结算试运行；河南、江西、上海、吉林、青海、黑龙江、新疆等 7 个省级现货市场完成短周期结算试运行。与此同时，省内电力中长期市场实现全覆盖，电力中长期交易“压舱石”作用有效发挥；市场交易机制持续完善，山西、四川、重庆、辽宁等地修订印发电力中长期交易规则。辅助服务市场日趋健全，在省级辅助服务市场全覆盖基础上，各地积极推动多元经营主体参与，贵州省能源局印发《贵州省新型储能参与电力市场交易实施方案（试行）》，国家能源局浙江监管办联合省能源局印发《虚拟电厂参与浙江电力辅助服务市场试点工作方案》。

专栏 4

部分省份现货市场建设情况

山西：山西于 2023 年 12 月 22 日成为我国首个转入正式运行的电力现货市场。正式运行后，山

西进一步完善新型经营主体参与市场交易机制，2 家分布式光伏通过聚合代理方式参与绿色电力交易，分布式新能源入市实现零的突破。

广东：广东 2024 年电力现货市场结算电量 421.5 亿千瓦时，占全市场直接交易用户总用电量的 10.7%。广东推动 220 千伏及以上电压等级的新能源全部参与现货市场，建立了新能源“全电量报量报价参与现货市场、基数电量+现货偏差结算”市场机制；推动独立储能电站报量报价参与现货市场，同步建立与区域调频市场的衔接机制，实现独立储能“一体多用、分时复用”的商业模式落地。

山东：2024 年，面对新能源出力特性引发的季节性、时段性电价波动，先后建立独立储能、新能源与其配建储能联合体参与现货市场的交易机制，其中 34 座独立储能电站参与市场，总容量达 373.8 万千瓦，有效平抑了新能源出力波动。同时，有效引导用户侧响应，依托大电网余缺互济优势拓展省间电力交易，形成“源网荷储”协同运行格局。不仅使山东现货市场峰谷价差在合理范围内持续扩大，也探索了新能源最大比例消纳的新型电力系统

建设模式。

甘肃：甘肃电力现货市场采用集中式模式、全电量优化，发用两侧双边报价，率先实现新能源及用户报量报价参与现货市场。通过现货市场与中长期交易协同，引导 240 万千瓦负荷参与调峰，全年新能源发电利用率 92.88%，新能源发电量占比突破 35%。

蒙西：蒙西结合外送电力高、新能源占比高的特点，采用日前市场“预出清”不结算的“单偏差结算”现货市场模式。蒙西电力现货市场自 2022 年 6 月起转入连续不间断结算试运行，持续完善市场交易机制，不断缩短中长期交易周期，细化落实分时电价政策，建立顶峰能力考核机制，市场建设运营规范程度不断提升。

（二）市场机制不断完善，衔接方式迭代优化

1. 中长期市场

中长期交易频次不断提升。截至 2024 年底，多数省份中长期交易常态化开市，交易频次和周期趋近运行日。河北

南网、蒙西、山西、山东、吉林等 19 个省（区）/地区最小交易周期已达到 D-2 日，云南已达到 D-1 日。

表 1 各地电力中长期交易周期频次

中长期交易最小周期	省（区、市）/地区
月	西藏
月内	北京、上海
周	天津、冀北、广西、海南、贵州
D-3	蒙东、青海、甘肃、江苏、重庆
D-2	河北南网、蒙西、山西、山东、吉林、黑龙江、辽宁、陕西、宁夏、新疆、安徽、浙江、福建、湖北、江西、河南、湖南、四川、广东
D-1	云南

2. 现货市场

现货市场交易主体和参与方式更加多元。在新能源参与现货市场方式上，2024 年，共有 20 个省（区、市）/地区的新能源参与电力现货市场。其中，广东、山东、甘肃等 15 个省（区）/地区以“报量报价”方式参与；山西、陕西、河南 3 个省份以“报量不报价”方式参与；辽宁、宁夏 2 个省（区）可自选参与方式。在用户侧参与现货市场方式上，2024 年已开展现货市场结算试运行的 25 个省（区、市）/地区中，用户侧均参与电力现货市场。各地综合考虑用户侧

主体的体量规模、分布格局、电价承受能力等因素，采用了不同的用户侧参与市场方式。其中甘肃以“报量报价”方式参与；山西、广东、山东等 18 个省（区、市）/地区以“报量不报价”方式参与，蒙西、湖北等 6 个省（区）/地区以“不报量不报价”方式参与。

表 2 2024 年各地新能源参与现货市场方式

新能源参与现货市场方式	省（区、市）/地区（区域）
报量报价	广东、山东、甘肃、蒙西、湖北、南方区域、安徽、湖南、江苏、河北南网、江西、吉林、黑龙江、新疆、青海
报量不报价	山西、陕西、河南
报量报价 / 报量不报价	辽宁、宁夏
不参与	浙江、福建、四川、重庆、上海

表 3 2024 年各地用户侧参与现货市场方式

用户参与现货市场方式	省（区、市）/地区（区域）
报量报价	甘肃
报量不报价	山西、广东、山东、南方区域、四川、安徽、陕西、辽宁、重庆、湖南、河北南网、江西、吉林、黑龙江、新疆、河南、宁夏、上海
不报量不报价	蒙西、湖北、青海、江苏、浙江、福建

3. 辅助服务市场

辅助服务品种日益丰富。在区域层面，华北、华东、华中、东北、西北主要开展区域内调峰交易，实现区域内资源余缺互济；南方开展与区域现货市场相衔接的区域调频、备用交易。在省内，各地主要开展调峰、调频等辅助服务交易，并根据电网实际运行需要，不断调整丰富辅助服务交易品种，探索爬坡等灵活调节资源的交易。

专栏 5 南方区域调频辅助服务市场实践

南方区域调频辅助服务市场于 2021 年 7 月 1 日正式运行，是国内首个以调频服务为交易品种的区域辅助服务市场，显著增强了南方区域电力系统的调频能力，为新能源大规模接入和消纳提供有力支撑。

2024 年，南方区域调频辅助服务市场总体运行平稳有序，市场年出清均价为 11.23 元 / 兆瓦，年调频总里程约 1.22 亿兆瓦。

随着独立储能 2024 年 2 月进入市场，南方区域调频辅助服务市场竞争加剧，市场整体呈现出

“量增价减”的趋势。2024 年南方区域调频辅助服务市场平均出清价格同比下降 11.9%，提供里程同比提升 10%以上。

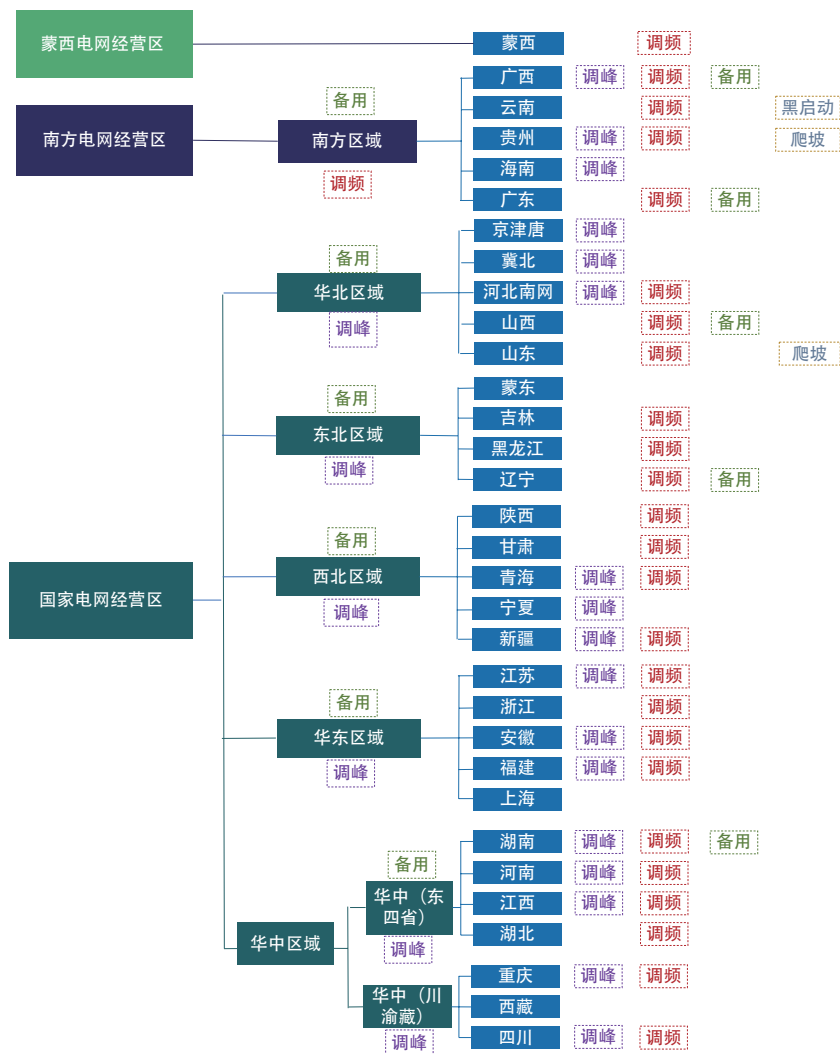


图 15 我国电力辅助服务市场品种

2024 年，全国电力辅助服务市场费用为 402.5 亿元，其中用户侧分摊费用 11.1 亿元，用户侧分摊占比 2.8%，用户侧平均度电分摊价格为 0.0008 元 / 千瓦时。发电侧煤电、风电、光伏发电、核电、水电、气电、其他电源分摊比例分别为 24%、44%、19%、8%、3%、1%、1%，发电侧平均度电分摊价格为 0.0053 元 / 千瓦时。

分品种来看，调峰、调频、备用、其他费用分别为 330.4、68.9、2.9、0.3 亿元。

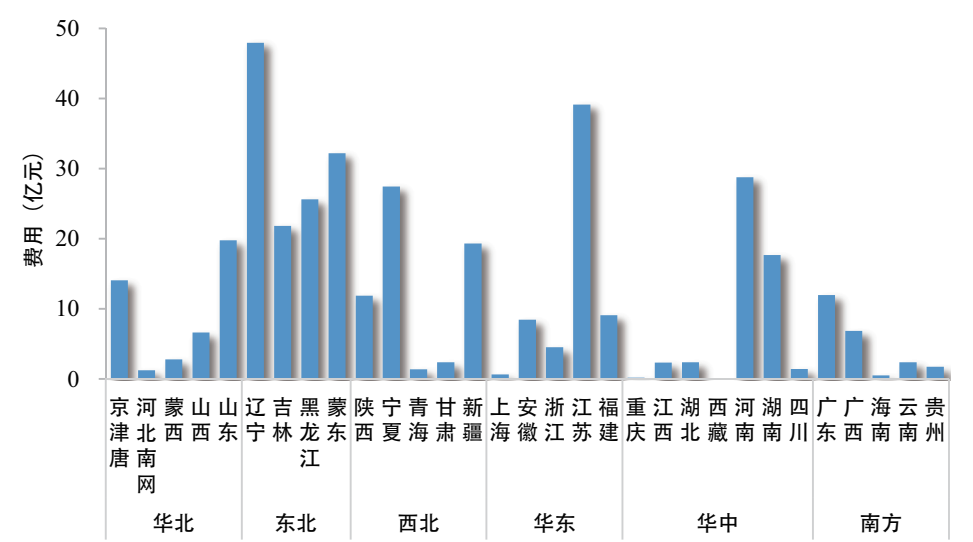


图 16 2024 年各地辅助服务市场费用情况

4. 市场衔接

中长期市场、现货市场和辅助服务市场协同发展。电力中长期市场夯实保供稳价基础、现货市场引导供需高效调

节、辅助服务市场有效支撑系统稳定运行的作用充分发挥。中长期市场交易频次和周期逐步趋近现货市场开市前，中长期市场不间断连续运营给予经营主体灵活调仓机会，山西、山东、广东等现货市场转正省份短周期中长期市场交易价格逐步与现货市场趋同；辅助服务市场与现货市场组织运营更加有序，调峰市场逐步与现货市场融合。2024 年 4 月 19 日，国家能源局山东监管办、山东省发展改革委、山东省能源局联合印发《山东电力市场规则（试行）》，将原有电力中长期、现货等规则进行修订整合，推动中长期、现货、辅助服务市场有机融合，交易组织、计量结算、信息披露、风险防控等环节协同衔接。

批发市场和零售市场相互贯通。售电公司对代理用户的负荷曲线管理作用更加明显，专业化服务水平得到进一步提升。零售市场套餐更加丰富，批零价格联动套餐比例提升，批发市场价格信号更好地向用户侧传导。

（三）规则体系初步完善，制度基础有效夯实

2024 年，国家发展改革委、国家能源局持续完善市场规则制度，印发《电力市场运行基本规则》（国家发展改革委 2024 年第 20 号令）、《电力市场信息披露基本规则》（国能发监管〔2024〕9 号）、《电力中长期交易基本规则—绿

色电力交易专章》（发改能源〔2024〕1123号）、《电力市场注册基本规则》（国能发监管规〔2024〕76号），电力市场基础规则体系初步构建，奠定了全国统一电力市场的制度基础。

《电力市场运行基本规则》从市场成员、交易类型与方式、电能量交易、电力辅助服务交易等方面，进一步规范电力市场行为；《电力市场信息披露基本规则》明确信息披露原则和方式、信息披露内容、披露信息调整等，规范电力市场信息披露行为；《电力中长期交易基本规则—绿色电力交易专章》规范绿色电力交易方式，推动绿色电力交易更好融入电力中长期交易；《电力市场注册基本规则》规范市场经营主体参与市场的基本条件和注册流程。

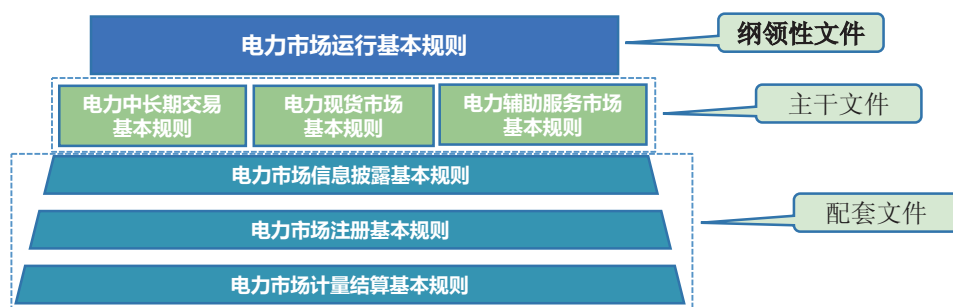


图 17 全国统一电力市场“1+6”基础规则体系

（四）能源转型持续推进，绿证绿电放量增长

持续深化绿电市场建设。为助力我国经济绿色低碳高质量发展，支持企业积极应对绿色贸易壁垒，更好参与国际市场竞争，北京电力交易中心组织研究编制了多年期绿电交易协议参考模板（PPA），对多年期绿色电力协议签订方式、违约处理等关键环节提出了具有操作性的建议，以使用户长期稳定采购绿色电力。

绿证交易量实现翻两番。2024 年全国完成绿证交易 4.46 亿个，同比增长 364%。其中，绿证单独交易 2.77 亿个，绿色电力交易绿证 1.69 亿个。绿证单独交易以跨省交易为主，2024 年跨省绿证单独交易达 2.56 亿个，约占单独交易总量的 92.32%。绿色电力交易以省内交易为主，2024 年省内绿色电力交易绿证达 1.52 亿个，约占绿色电力交易绿证总量的 89.64%。分省来看，2024 年内蒙古自治区出售绿证规模最大、达 8041 万个，浙江省购买绿证规模最大、达 7622 万个。

绿电交易总量大幅提升。2022 年全国绿色电力交易电量为 181 亿千瓦时，2023 年达 697 亿千瓦时。2024 年，继国家电网、南方电网之后，蒙西电网获批复同意开展绿色电力交易，标志着绿色电力交易实现全覆盖。2024 年，全国各电力交易中心累计完成绿色电力交易电量 2336 亿千瓦时，

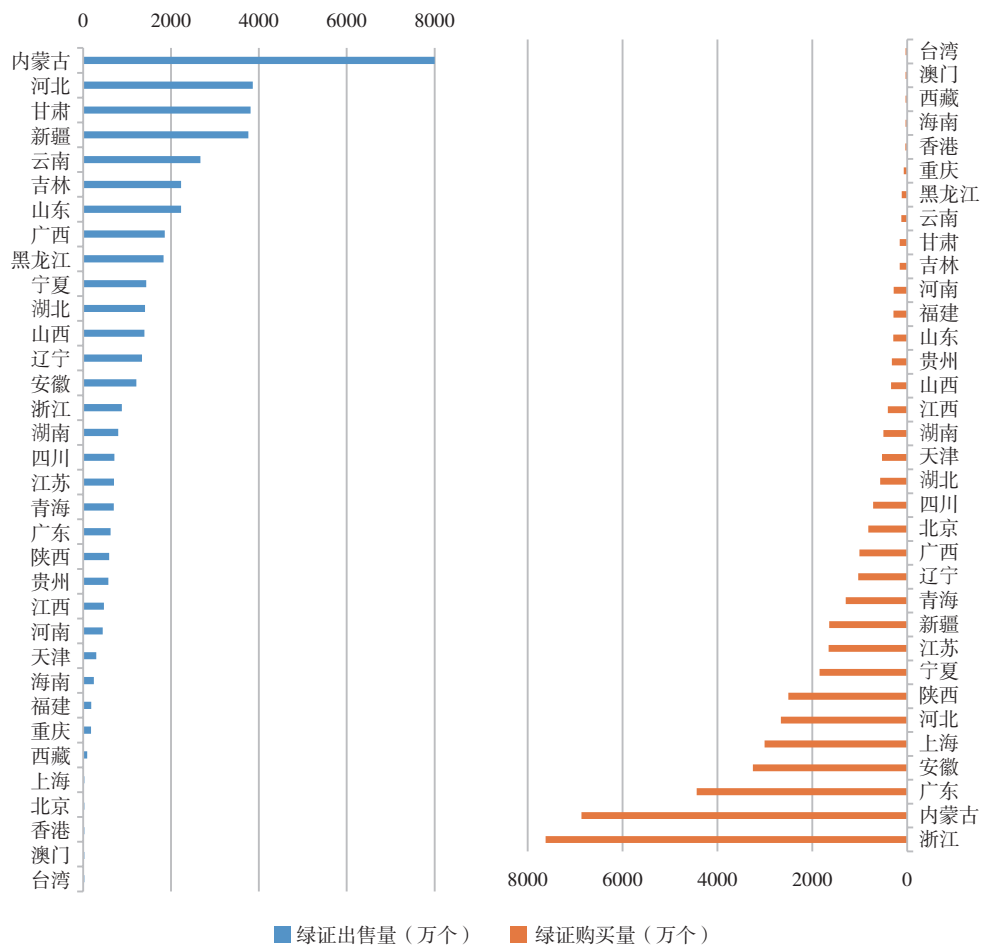


图 18 2024 年全国各省（区、市）绿证出售及购买情况

同比增长 235.2%。其中，国家电网经营区绿色电力交易电量 1358 亿千瓦时，南方电网经营区绿色电力交易电量 221 亿千瓦时，蒙西电网经营区绿色电力交易电量 757 亿千瓦时。分地区来看，2024 年蒙西绿色电力交易规模最大，冀北和辽宁次之。

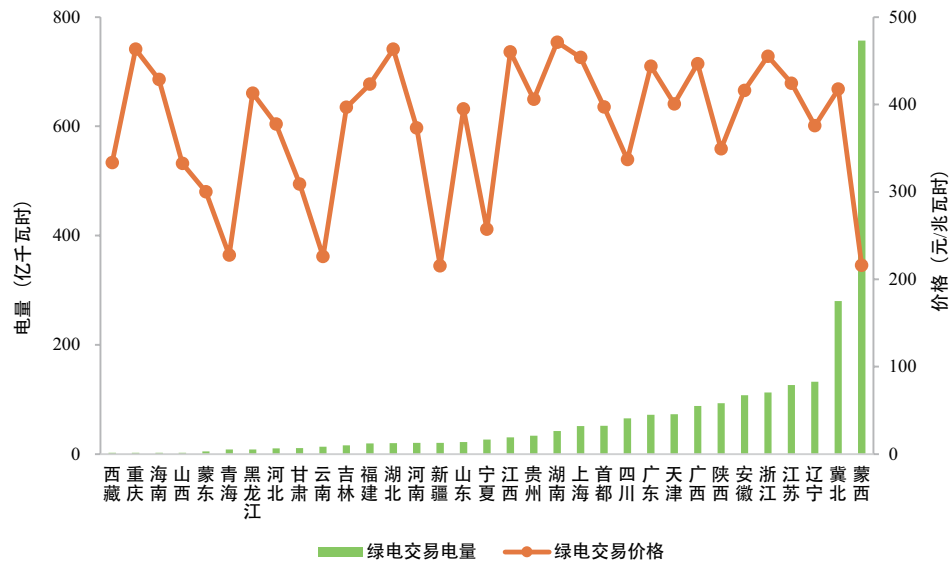


图 19 2024 年全国各地绿色电力交易电量及交易均价情况

专栏 6 在华国际化工企业参与绿色电力交易

自 2021 年起巴斯夫在华参与绿色电力交易；2022 年，巴斯夫绿电采购量达 3.3 亿千瓦时；2023 年，巴斯夫与国家电投、明阳集团签署长期绿电采购协议；2024 年，巴斯夫与中国能建广东院签署为期 25 年的电力购买协议（PPA），为巴斯夫湛江一体化基地采购可再生电力。

2024 年，为进一步推动企业自身清洁化生产，巴斯夫杉杉电池材料有限公司在长沙和宁夏基地建设分布式光伏电站。此外，2024 年巴斯夫与中

电国际（CLP China）和远景科技集团（Envision Energy）签署为期 10 年的嵌套式购电协议，以期在未来十年实现南京、如东和镇江基地 100% 可再生能源供应。

（五）市场信号精准引导，保供稳价作用凸显

电力市场助力保障电力供应。电力中长期交易电量占市场化电量比重超 90%，充分发挥“压舱石”作用。2024 年迎峰度夏期间，在用电负荷大幅高于往年情况下，依托电力中长期及省间现货市场，跨区通道最大送电能力达 1.42 亿千瓦，最大支援华东、西南 1400 万千瓦，有效保障经济社会发展用电需要。

高峰高价激励火电企业积极保供。在用电负荷高峰、新能源出力下降时段，现货市场价格同步上涨，火电企业通过强化设备运维、优化厂用电等措施，确保高峰高价时段能够顶峰发电，保障电力供应。例如，2024 年蒙西火电机组发电受阻率、非计划停机率分别由现货市场连续试运行前的 13.7%、4.7% 下降至 4.9%、2.4%，顶峰发电能力大幅提升，有效保障迎峰度夏、度冬期间的电力供应。

价格信号引导工商业用户错峰用电。电力现货市场形成的分时价格信号能够有效挖掘用户侧调节潜力，对于具备调节能力的工商业用户，通过优化生产时序安排，将更多的生产计划调整至低价、零价甚至负价的时段，既有利于降低用电成本，对电力保供和消纳新能源也有着积极的促进作用。例如，2024 年山东省通过价格信号引导可调节负荷转移，实现午间填谷 508 万千瓦、晚间削峰 225 万千瓦，促进了新能源消纳和提升电网安全稳定运行水平。

用能成本总体保持稳定。在近年全球范围内能源供应趋紧、价格大幅波动的背景下，我国通过完善电价机制、推进市场化交易等措施，保持电价基本稳定，实现用能成本总体可控。

专栏 7 山西现货市场推动电力保供能力全面提升

山西依托电力现货市场，引导“源网荷储”密切跟踪供需变化，充分发挥保供和调节作用，成功应对历史最高负荷考验。

一是激励发电侧顶峰发电。充分发挥现货市场价格引导作用，2024 年度夏、度冬期间，省调机组开机容量创历史新高。发电企业为响应价格信

号，提前设备消缺，降低机组发电受阻容量。山西现货市场自 2021 年 4 月启动不间断运行以来，全省日均增加顶峰发电能力约 5%。二是推动新型主体参与保供。2024 年燃气机组累计启停调峰 510 台次，同比增加 30%；引导 12 家独立储能、5 家虚拟电厂通过市场化方式参与电网调节，发挥顶峰能力 150 万千瓦。三是引导负荷侧资源优化用电。现货市场分时电价向零售用户疏导，引导用户由“接受价格”向“响应价格”转变，主动调整用电行为，用电负荷由晚高峰向中午低谷转移约 200 万千瓦，以市场化方式实现了负荷移峰填谷，电力保供能力显著提升。

（六）零售市场稳步扩容，交易电量稳中有增

售电公司作用更加凸显。2021—2024 年，开展业务的售电公司数从 1889 家增长到 2613 家，年均增长率约 11.4%。所代理的零售用户数从 31.76 万增长到 65.35 万，年均增长率约 27.2%，售电公司平均代理零售用户数约为 250 个，售电公司数量与代理零售用户数保持逐年稳定增长。

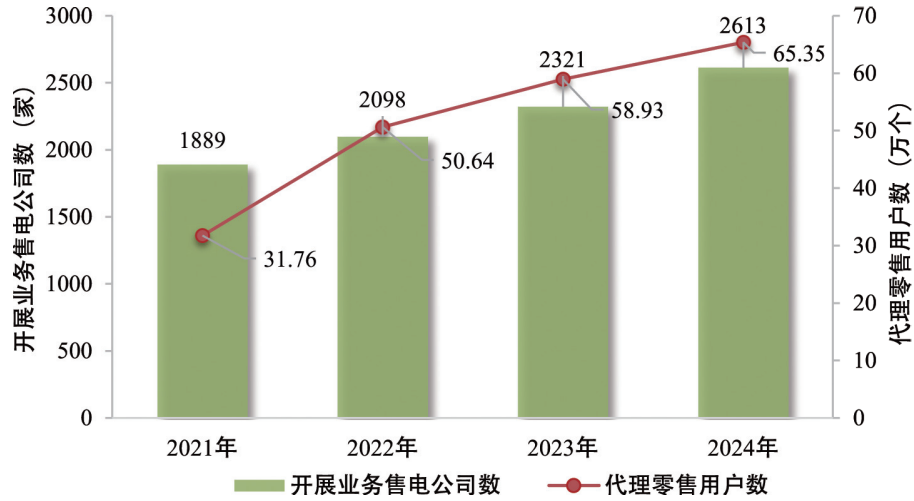


图 20 2021—2024 年零售市场经营主体数量

零售市场电量稳中有增。2021—2024 年，零售市场交易电量从 2.41 万亿千瓦时增长到 3.66 万亿千瓦时，年均增长率约 14.9%，市场规模持续扩大。

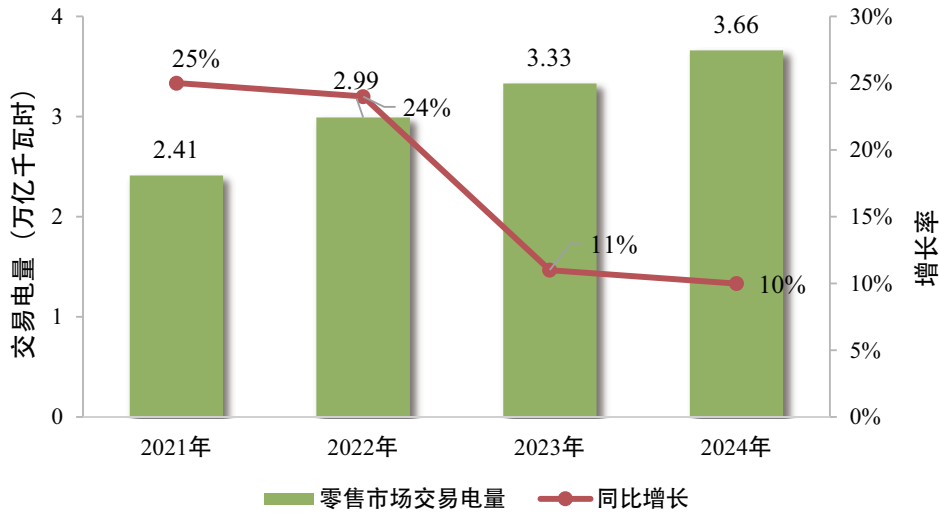


图 21 2021—2024 年零售市场交易电量及增长情况

（七）新型主体蓬勃发展，业态类型加快丰富

新型储能参与市场方式更加多样。2024 年，我国新型储能参与电力市场呈现“政策框架统一、区域差异化探索、技术多元化应用”的特征，通过参与电能量市场、辅助服务市场等多途径实现收益。山东、广东储能以“报量报价”方式参与现货，山西储能可自主选择“报量报价”或“报量不报价”方式参与现货，甘肃储能以“报量不报价”方式参与现货，在电价高峰放电、低谷充电。广东、甘肃、山西、山东等地储能可自主选择参与现货和调频市场。

虚拟电厂参与电力市场有益尝试。《2024 年能源监管工作要点》要求，切实发挥需求侧参与系统调节作用，推动用户侧储能、虚拟电厂、负荷聚合商等新型主体进入电力市场。《国家能源局关于支持电力领域新型经营主体创新发展的指导意见》（国能发法改〔2024〕93 号）提出，新型经营主体参与市场与其他经营主体享有平等的市场地位，鼓励新型经营主体平等参与电力市场。各地积极探索通过多种交易品种互补，鼓励虚拟电厂等新型经营主体参与电能量市场、辅助服务市场。市场经营主体多元，有华能、国电投、三峡、京能等国有企业，有电管家、特来电、蔚来汽车、万邦数字等民营企业，有芬欧汇川等外资企业。

专栏 8 甘肃新型储能参与电力市场

甘肃探索建立有利于新型储能参与的市场机制，为不同场景新型储能提供商业途径：新型储能在电力现货市场通过“低充高放”获取电能量价差收益，在辅助服务市场通过提供调频服务获得补偿。截至 2024 年底，甘肃新型储能装机规模 442 万千瓦 /1153 万千瓦时，新型储能在自主参与市场的情况下，2024 年平均利用小时数 1146 小时，其中电网侧储能 2074 小时，电源侧储能 944 小时，基本实现日均一充一放，部分日期实现两充两放。

甘肃新型储能 80% 以上为新能源配建储能，存在“点多、量小、控制难”的特点。为充分发挥储能在电力系统平衡和新能源消纳方面的规模化作用，甘肃创新运用新型储能协调控制系统，探索尝试储能资源的市场化和精准化调控。2024 年甘肃新型储能累计充电量 20.91 亿千瓦时，提升新能源利用率 2.41 个百分点；用电高峰时段最大放电电力 323 万千瓦，有效缓解电力保供压力。在甘肃新能源装机占比超过 64%、日最大出力波动超过 2000

万千瓦的情况下，助力电力安全稳定供应，支持新能源利用率在 90% 以上。

（八）监管体系持续健全，市场治理逐步规范

完善电力市场监管规则制度。2024 年 11 月，十四届全国人大常委会第十二次会议审议通过能源法，提出加快建立主体多元、统一开放、竞争有序、监管有效的能源市场体系，推动能源领域自然垄断环节独立运营和竞争性环节市场化改革，依法加强对能源领域自然垄断性业务的监管和调控。2024 年 4 月，国家发展改革委、国家能源局制修订《电力市场监管办法》（国家发展改革委 2024 年第 18 号令），进一步明确电力市场监管职责，完善对各类电力市场成员的监管内容，着力维护电力市场秩序，保障电力市场统一、开放、竞争、有序。

开展电力市场秩序突出问题专项监管。聚焦电力领域突出矛盾和电力市场化交易及市场运行中存在的突出问题，国家能源局在全国开展涵盖市场规则执行、市场竞争行为、信息披露报送等内容的电力市场秩序专项监管。针对监管发现问题，国家能源局印发《关于进一步规范电力市场交易行为

有关事项的通知》（国能综通监管〔2024〕148号），从全面贯彻落实全国统一电力市场建设部署、推动经营主体间合规交易、规范市场报价行为、定期做好监测分析、强化日常监管等五个方面提出规范性要求。

开展电力市场不当干预行为整治。为进一步明晰行政干预行为判定界限、统一判断标准、明确相关工作程序，国家能源局制定《以行政手段干预电力市场化交易行为整治工作指引(试行)》，建立国家发展改革委、国家能源局联办机制，并进一步明确了不当干预行为判定标准和工作程序，为持续开展以行政手段干预电力市场化交易行为专项整治提供依据和指引。

专栏9 电力企业串谋报价等行为整治典型案例

国家能源局山东监管办依法依规对4家发电企业组织所属电厂串通报价等行为进行调查，并作出罚款金额合计112万元的行政处罚。

国家能源局浙江监管办依法依规对某电力国企2家下属发电企业串通报价、操纵市场行为进行调查，并作出罚款金额合计50.4万元的行政处罚。

国家能源局华中监管局依法依规对某电力交易

中心通过事后调整合同电量变相减轻售电公司偏差考核的行为进行调查，并作出罚款金额 46 万元的行政处罚。

深入开展电力市场数字化监管。为加快推进电力市场数字化监管工作，推动实现数字化监管常态化开展，国家能源局印发《关于推进电力市场数字化监管工作的通知》（国能发监管〔2024〕84 号），按照“统一标准、数据共享、分批开展、持续完善”的思路，指导各地建立适合当地实际、科学完备的电力市场数字化监管指标体系，不断提升市场监管的整体性和协同性；推动各地完善电力市场数字化监管功能设计，包括市场基础数据实时监测、风险预警和在线监管等功能，聚焦远程、实时电力市场数字化监管工作开展需求；指导国家能源局各派出机构建立健全电力市场数字化监管工作机制，探索实践电力市场数字化监管应用。

专栏 10 山东积极探索电力市场数字化监管

伴随电力现货市场建设推进，数字化监管也提上日程，结合山东电力现货市场建设和运营特点，

山东在已有平台基础上，创新构建包含 5 大类 247 项指标的市场监管指标体系，为各地实现数字化监管提供参考模板。同步推进数字化监测系统建设开发，包括运行监视、行为监测、效益监测等 6 大模块，实现市场运行分析、异常行为识别及风险识别预警等功能。

截至 2024 年底，山东电力市场数字化监管系统已连续稳定运行一年，累计接入主体申报、市场运行和交易结算等核心数据 1153 项，生成监测周报 26 份、月报 6 份。国家能源局山东监管办依托数字化监测手段，共发现超阈值指标 31 项，发现电力市场秩序突出问题线索 22 项，主要包括发电企业集中报价、通过报高价规避开机趁机消缺等违规行为，以及利用中长期与现货市场价差的季节性特点超签电量套利等典型问题，为市场风险防控、规则修订和监管执法提供了依据和支撑。

三、2025 年电力市场建设重点

2025 年，全国统一电力市场体系将初步建成，更好发挥促进电力保供、低碳转型、稳定价格的作用。**形成电力市场“1+6”基础规则体系**，印发电力市场辅助服务、计量结算基本规则，修订《电力中长期交易基本规则》，通过中长期市场更好落实省间优先发用电计划，形成稳定的省间基础潮流，有效衔接省间中长期连续交易和现货市场，促进余缺互济；有效衔接省内中长期和现货连续交易，实现电力电量渐进式平衡调控，夯实省内电力保供基本盘；提升中长期交易灵活性，支持各地结合实际完善年度、月度、月内等不同周期合同调整机制，鼓励相关经营主体根据自身需求，灵活开展中长期合同转让、变更等交易，提高合同履约质量。**跨电网经营区电力交易实现常态化**，统一市场规则、交易品种和交易时序，促进电力资源在全国范围内的优化配置。**基本实现现货市场全覆盖**，南方区域电力市场转入连续结算试运行，省级现货市场全面实现连续结算，强化中长期市场、现货市场、辅助服务市场的有效衔接。

推动新能源上网电量全面参与市场，完善辅助服务价格政策和交易规则，加快构建适应新型电力系统的市场价格机制。建立电力市场评价制度，加强各地电力市场建设横向对比和历年进展纵向分析，引导市场有序发展。进一步完善电力市场监管体系，持续开展电力领域综合监管、电力市场秩序专项监管，常态化开展地方不当干预电力市场交易行为整治，创新数字化监管方式，充分发挥电力市场管理委员会行业自律、市场运营机构市场监测、监管机构专业监管的电力市场运行“三道防线”作用，推动落实中长期电力交易签约履约激励约束机制，防范市场风险，保障市场稳定，深化市场信用监管，增强经营主体诚实守信意识。

四、大事记

2024 年 1 月 9 日，国家能源局印发《2024 年能源监管工作要点》（国能发监管〔2024〕4 号），提出系统推动全国统一电力市场体系建设。

2024 年 1 月 31 日，国家能源局印发《电力市场信息披露基本规则》（国能发监管〔2024〕9 号），进一步对电力市场信息披露进行规范，明确信息披露的原则和方式、信息披露内容、披露信息调整、信息保密和封存等有关内容。

2024 年 2 月 7 日，国家发展改革委、国家能源局联合印发《关于建立健全电力辅助服务市场价格机制的通知》（发改价格〔2024〕196 号），规范调峰、调频、备用服务等三类辅助服务价格形成机制。

2024 年 4 月 12 日，国家发展改革委出台《电力市场监管办法》（国家发展改革委 2024 年第 18 号令），进一步明确国家能源局及其派出机构的监管职责，扩大监管范围，规范各类市场参与者行为，完善市场规则体系和增补监管措施。

2024 年 4 月 25 日，国家发展改革委出台《电力市场运行基本规则》（国家发展改革委 2024 年第 20 号令），全国统一电力市场“1+6”基础规则体系中的“1”正式落地，为全国统一电力市场体系建设提供基础制度规则遵循。

2024 年 4 月 25 日，国家能源局印发《关于开展 2024 年电力市场秩序突出问题专项监管的通知》（国能综通监管〔2024〕61 号），在全国范围内开展电力市场秩序突出问题专项监管，重点对交易规则执行情况、限制市场竞争情况、信息披露及报送情况、其他电力市场秩序突出问题进行监管。

2024 年 6 月 17 日，山东电力现货市场转入正式运行，成为 2024 年首个，也是全国范围内第三个转入正式运行的省级电力现货市场。

2024 年 7 月 1 日，长三角电力市场暨省市间电力互济交易正式启动。按照电力互济、错峰互补、容量互备、供需互动的总体思路，长三角电力市场涵盖富余需求侧可调节资源、富裕新能源消纳等 6 个交易品种。

2024 年 7 月 24 日，国家发展改革委、国家能源局印发《电力中长期交易基本规则—绿色电力交易专章》（发改能源〔2024〕1123 号），明确按照“省内为主、跨省区为辅”的原则，推动绿色电力交易有序开展，满足电力用户绿色电力购买需求。

2024年7月29日，国家能源局在京召开会议，启动部署2024年电力领域综合监管现场监管工作，在黑龙江、安徽、山东、广西、四川和宁夏等6个省（区）开展新一轮电力领域综合监管，围绕煤电规划建设和改造升级、电网公平开放接入服务、电网企业利用自然垄断优势向下游竞争性环节延伸、电力调度交易与市场秩序、可再生能源消纳、“获得电力”服务水平提升、加快建设全国统一大市场举措落实等7个方面开展监管。

2024年9月5日，甘肃电力现货市场转正式运行大会在兰州召开，标志着甘肃电力现货市场连续不间断结算试运行40个月后转入正式运行。

2024年9月13日，国家能源局印发《电力市场注册基本规则》（国能发监管规〔2024〕76号），进一步规范市场经营主体注册管理水平，解决各地在实际工作中存在的准入标准模糊、设置准入门槛、注册流程不统一、经营主体多头注册等问题。

2024年10月15日，经历近1000天的实践检验，省间电力现货市场转入正式运行。省间电力现货市场覆盖国家电网和蒙西电网经营区，能够有效反映市场供需，形成能涨能跌的市场化价格机制，是全国统一电力市场的重要组成部分。

2024年10月25日，国家发展改革委在江西省南昌市

召开推进全国统一电力市场建设现场会。国家发展改革委党组成员、副主任李春临，国家能源局党组成员、副局长宋宏坤出席会议并讲话。会议充分肯定了全国统一电力市场建设取得的重要阶段性进展，要求各有关方面要重点聚焦加快电力现货市场建设、推进中长期市场连续运营、强化省间市场大范围资源配置能力、促进各级各类电力市场衔接协同等关键环节，持续完善电力市场体系和交易机制，加快建设适应新型电力系统要求、更好服务高质量发展的全国统一电力市场。

2024 年 11 月 28 日，国家能源局印发《关于支持电力领域新型经营主体创新发展的指导意见》（国能发法改〔2024〕93 号），明确新型经营主体定义范围，规范新型经营主体调度运行管理要求，优化完善新型经营主体的市场注册、交易机制与计量结算，推动新型经营主体公平参与电力市场，以市场机制促进新型经营主体创新发展。

2024 年 11 月 29 日，在国家能源局统筹组织下，中国电力企业联合会联合多家单位共同发布《全国统一电力市场发展规划蓝皮书》。

2024 年 11 月 30 日，南方区域电力市场完成首次全月结算试运行，对南方区域电力市场的市场机制设计、运营组织流程、技术支撑能力进行了全方位验证，为未来转入连续结算试运行乃至正式运行奠定基础。

2024年12月15日，2025年全国能源工作会议在京召开。国家发展改革委党组书记、主任郑栅洁出席会议并讲话，国家能源局党组书记、局长王宏志作工作报告。会议强调，持续深入推进实施能源安全新战略，加快规划建设新型能源体系，加快建设全国统一电力市场，着力提高监管效能和水平，将2025年初步建成全国统一电力市场作为能源工作重点。

2024年度中国电力市场 发展报告

**2024 China Electricity Market
Development Report**

June 2025 6月

Guiding Unit

Market Supervision Department of National Energy Administration

Compilation Unit

China Electric Power Planning & Engineering Institute

Supporting Units

National Power Dispatch and Control Center

Beijing Power Exchange Center Co., Ltd.

China Southern Power Grid Marketing Department

China Southern Power Grid Power Dispatch and Control Center

Guangzhou Power Exchange Center Co., Ltd.

Inner Mongolia Power Dispatching Company

Inner Mongolia Power Trading Center Co., Ltd.

Foreword

2024 is the year to fully implement the spirit of the Third Plenary Session of the 20th CPC Central Committee on "building a national..."

This is a crucial year for the deployment of a "unified electricity market." This year, significant progress was made in the construction of the electricity market.

Significant progress has been made in the inter-provincial spot market and the spot markets in Shandong and Gansu.

With its formal operation, the construction of provincial-level spot markets has entered a new stage of accelerated expansion; Southern

The regional electricity market has launched a trial run of monthly settlements, and the Yangtze River Delta region has established inter-provincial and inter-city electricity...

Mutual assistance trading mechanism; full coverage of the green electricity market; basic rules for the operation of the electricity market.

Basic rules such as electricity market information disclosure and market registration have been successively introduced, and many

A multi-tiered, multi-category, multi-functional, and multi-entity electricity market system has been initially established.

To comprehensively summarize the progress and achievements of my country's electricity market construction in 2024, the State...

Under the guidance of the Market Supervision Department of the National Energy Administration, the China Electric Power Planning & Engineering Institute, with the support of relevant units,

The "2024 China Electricity Market Development Report" was compiled under its guidance. (Report system)

This report summarizes the innovative practices and fruitful achievements of the national unified electricity market construction in 2024, provides a panoramic view of the

market construction dynamics in various regions, and proposes key points for electricity market construction in 2025. This report is both a reflection of the energy industry's

implementation of the decisions and deployments of the CPC Central Committee and the State Council.

This is a preliminary report card, and also a testament to deepening reforms and promoting high-quality development of the electricity market on the new journey.

A reference for action on quantitative development.

2025 is the final year of the 14th Five-Year Plan and also the year the Energy Law will be implemented.

The year of the Great Leap Forward. Looking ahead to 2025, a unified national electricity market will be initially established.

We hope to use this as a platform to build consensus among all parties, solve reform challenges, and promote the development of electricity.

The power market is moving towards a unified, efficient, and sustainable future, contributing to the construction of a clean and low-energy market.

A new energy system that is carbon-neutral, safe, and efficient will be provided with stronger support!

Table of contents

I. Overview of the 2024 Electricity Market	01
(I) Electricity Supply and Demand Situation.....	01
(II) Information on the operating entity.....	03
(III) Transaction Volume and Price Situation.....	03
 II. Review of the Progress and Achievements of the Electricity Market in 2024	 11
(I) The market system is being built at an accelerated pace, and a sound multi-level and multi-dimensional structure is being established.....	12
(II) The market mechanism is constantly improving, and the connection methods are being iteratively optimized.....	20
(III) The rules system has been initially improved and the institutional foundation has been effectively strengthened.....	26
(iv) Energy transition continues to advance, with a significant increase in the issuance of green certificates and green electricity.....	28
(V) Precise market signals guide supply and stabilize prices, highlighting its role in ensuring supply and price stability.....	31
(vi) The retail market has steadily expanded, and the volume of electricity traded has increased steadily.....	33
(vii) New types of business entities are flourishing, and business formats are rapidly becoming more diverse.....	35
(viii) The regulatory system has been continuously improved and market governance has been gradually standardized.....	37
 III. Key Tasks for Electricity Market Development in 2025	 41
 IV. Major Events	 43

I. Overview of the Electricity Market in 2024

(I) Electricity supply and demand situation

In 2024, the total installed power generation capacity in China reached 3.349 billion kilowatts, with an increase of [missing information].

The total installed power generation capacity is 429 million kilowatts; of which, newly added wind and solar power generation capacity is 358 million kilowatts.

The total installed capacity reached 1.407 billion kilowatts, a year-on-year increase of 33.9%.

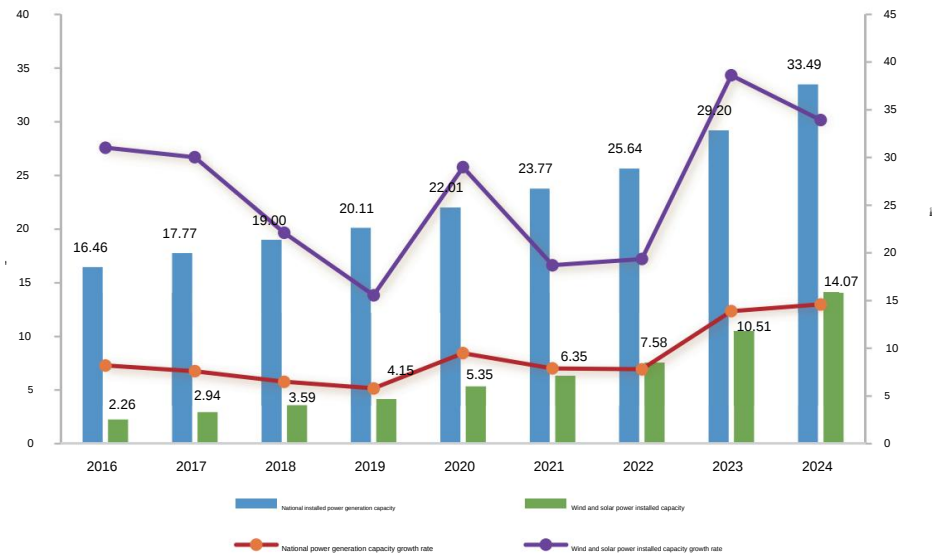


Figure 1. National Power Generation Installed Capacity, 2016-2024

In 2024, China's total power generation reached 10.09 trillion kilowatt-hours, a year-on-year increase of [missing data].

6.7%; of which, wind and solar power generation increased by 366 billion kilowatt-hours, accounting for 6.7% of the total new power generation.

Electricity consumption accounted for 58.1%, reaching 1.83 trillion kilowatt-hours.



Figure 2. National Power Generation, 2016-2024

In 2024, the total electricity consumption in China reached 9.85 trillion kilowatt-hours, a year-on-year increase of [missing data].

Growth of 6.8%, with an average annual growth rate of 6.6% from 2016 to 2024.

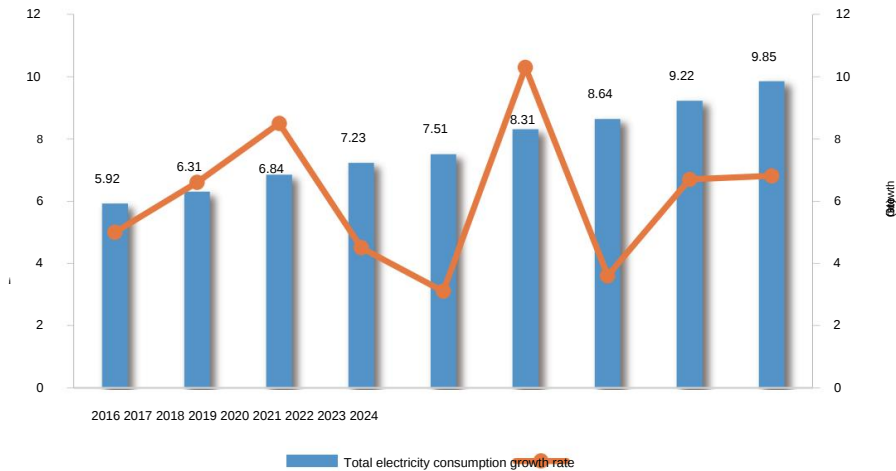


Figure 3. National Electricity Consumption, 2016-2024

(II) Information on the operating entity

The number of various business entities has steadily increased, and market participation has continued to improve.

In 2024, the number of electricity market operators nationwide reached 816,000, a year-on-year increase of [missing information].

8.9%. This includes 35,000 power generation companies and 777,000 electricity users.

There are 4,409 power companies. All coal-fired power units on the power generation side have entered the market, exceeding half.

New energy sources, as well as some gas-fired power generation, nuclear power, and hydropower, participate in the market; on the user side, excluding

All industrial and commercial users, except for residential and agricultural users, has entered the market.

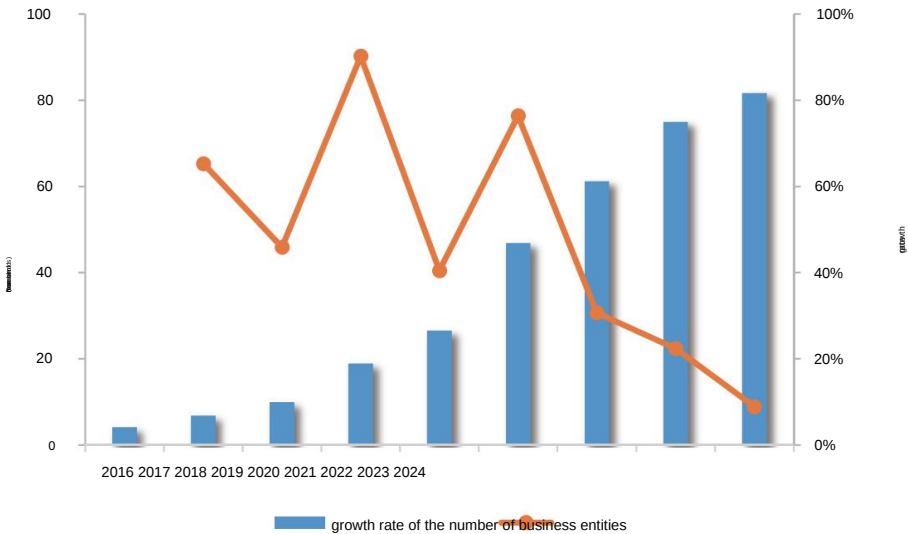


Figure 4. Number of Electricity Market Operators, 2016-2024

(III) Transaction volume and price situation

1. Overall national level

Electricity trading through market mechanisms continued to grow nationwide. In 2024 , the national market-based electricity trading...

Electricity consumption reached 6.18 trillion kilowatt-hours, a year-on-year increase of 9.0%; accounting for a significant portion of total electricity consumption.

62.7%, an increase of 1.3 percentage points year-on-year, exceeding 60% for three consecutive years; new energy

Electricity traded in the renewable energy market totaled 956.9 billion kilowatt-hours, accounting for 52.3% of total renewable energy generation.

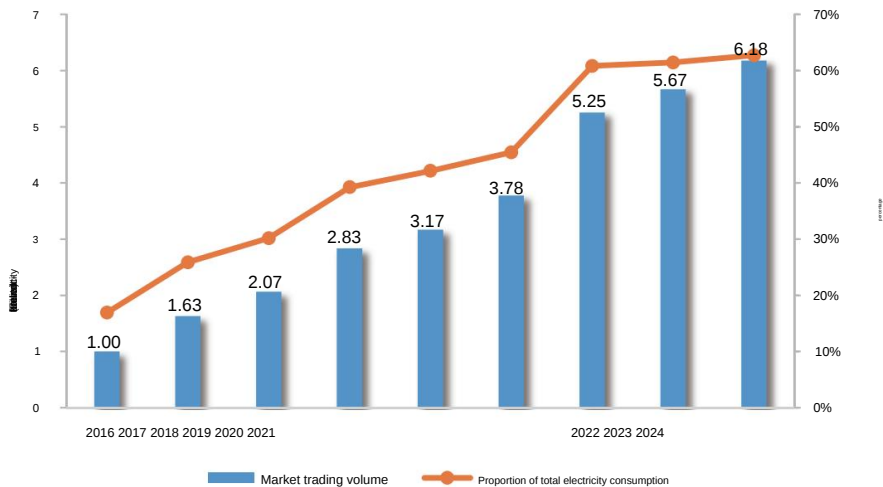


Figure 5. National Market-Based Electricity Transactions and Their Proportion in Total Electricity Consumption, 2016-2024

Looking at the monthly figures, the largest single-month market transaction volume occurred in July, reaching [amount missing].

603.5 billion kilowatt-hours; the smallest market transaction occurred in February, reaching 416.1 billion kilowatt-hours.

100 million kilowatt-hours.

Looking at different operating areas, the cumulative total of power trading centers within the State Grid's operating area...

The organization completed 4.72 trillion kilowatt-hours of market-traded electricity, a year-on-year increase of 6.3%.

Of this, inter-provincial electricity transactions amounted to 1.17 trillion kilowatt-hours; within the operating area of China Southern Power Grid...

The power trading center has cumulatively organized and completed market transactions of 1.14 trillion kilowatt-hours.

Year-on-year growth of 22.1%, of which inter-provincial electricity transactions amounted to 0.26 trillion kilowatt-hours; Inner Mongolia

The ancient power trading center has cumulatively organized and completed market transactions of 0.32 trillion kilowatt-hours of electricity.

At that time, it increased by 9.1% year-on-year.

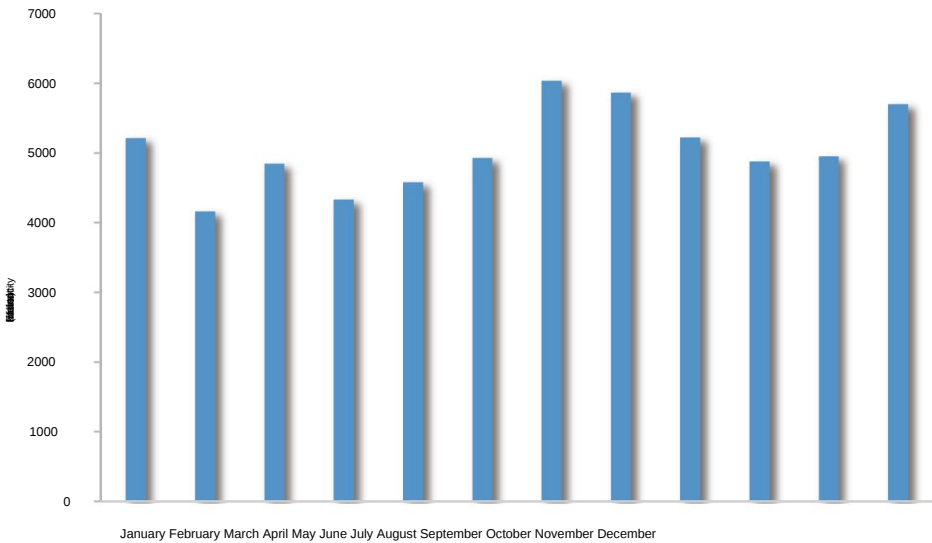


Figure 6. Monthly Electricity Volume of National Medium- and Long-Term Transactions in 2024

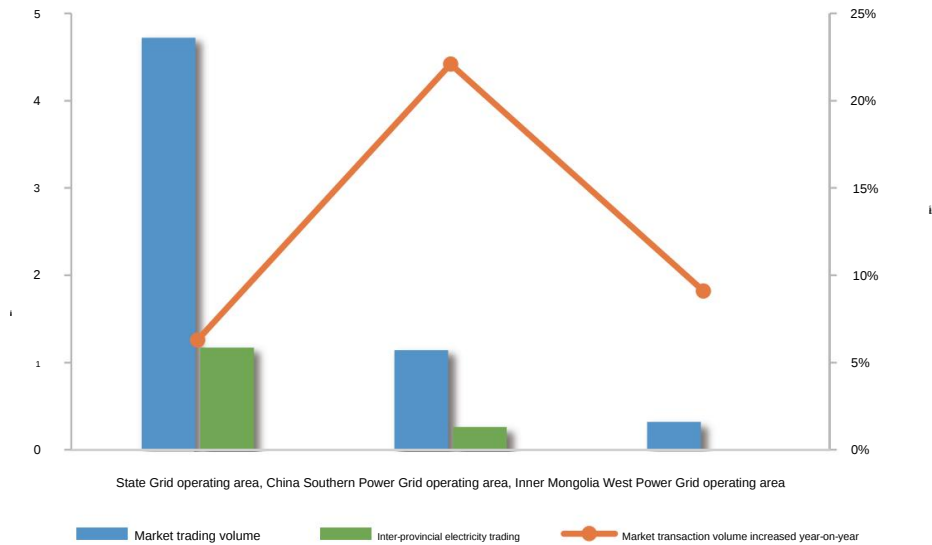


Figure 7 Transaction Scale by Business Area

2. Cross-provincial and cross-regional transactions

The scale of cross-provincial and cross-regional medium- and long-term transactions continued to expand. In 2024, the national cross-provincial and cross-regional medium- and long-term transaction volume reached a certain level.

The total amount of electricity traded between provinces and regions in medium and long term reached 1.39 trillion kilowatt-hours, a year-on-year increase.

19.8yy

Inter-provincial spot electricity trading was active. In 2024 , the total inter-provincial spot electricity market...

The total electricity volume was 37.631 billion kilowatt-hours, and the weighted average transaction price was 0.412 yuan/kilowatt-hour.

Electricity sold in Hubei province accounted for the largest share, approximately 17.16% of the total transaction volume. Total buyers...

The total electricity traded was 34.117 billion kilowatt-hours, and the weighted average price was 0.573 yuan/kWh.

Kilowatt-hours. Zhejiang and Sichuan purchased the most electricity, accounting for the largest share of total purchased electricity.

34.12% and 23.73%.

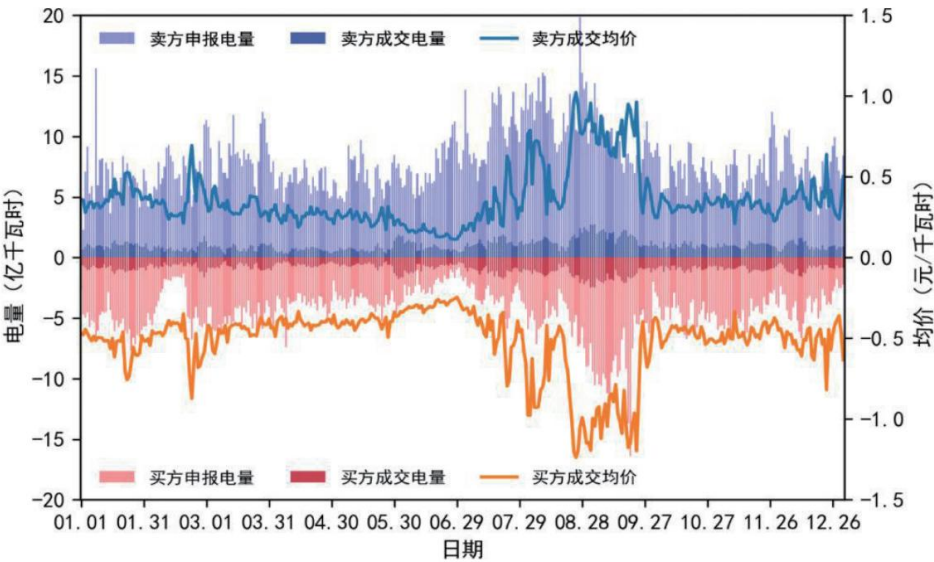


Figure 8. Inter-provincial Electricity Spot Transaction Volume and Price in 2024

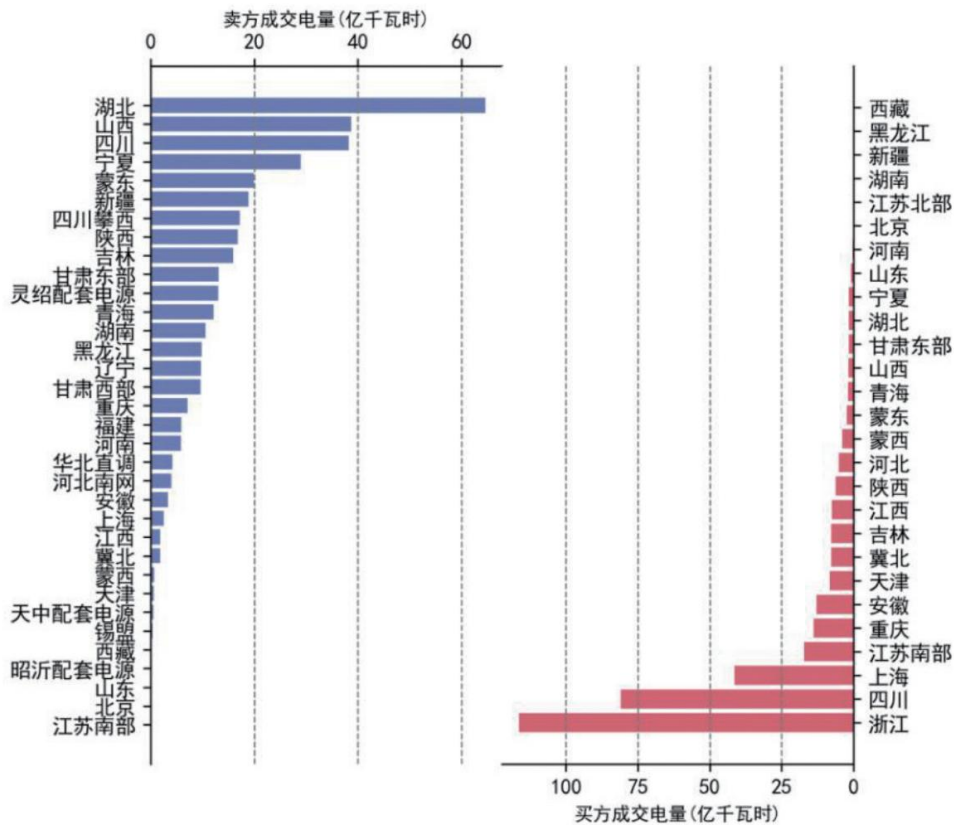


Figure 9. Provincial Electricity Transactions in the Inter-Provincial Spot Market in 2024

3. Intra-provincial market transactions

Overall, intra-provincial medium- and long-term electricity trading volume increased. In 2024 , the national provincial...

The total electricity traded at the power trading center reached 4.75 trillion kilowatt-hours, a year-on-year increase of [missing data].

5.4%. Of this, direct electricity transactions within the province amounted to 4.55 trillion kilowatt-hours (including green electricity).

Electricity trading (0.20 trillion kWh), power generation rights trading (0.20 trillion kWh),

Other transactions totaled 4.94 billion kilowatt-hours.

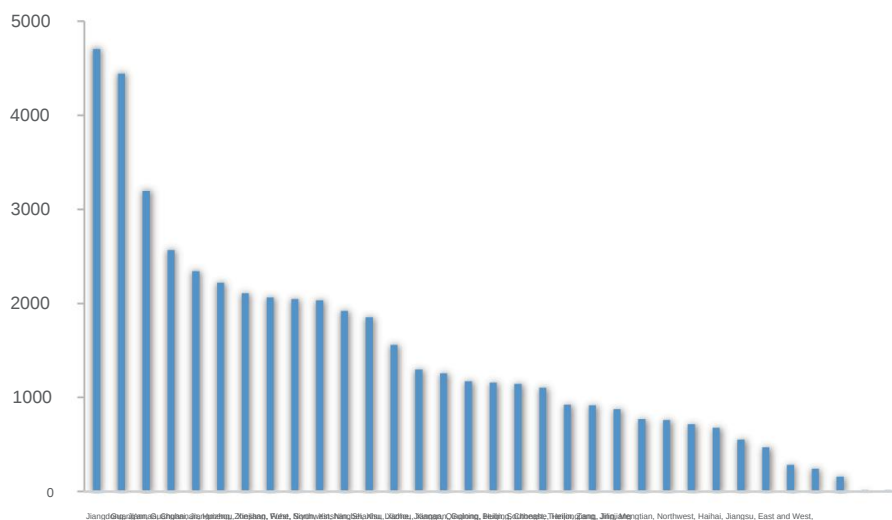


Figure 10. Medium- and Long-Term Electricity Transactions in Various Regions in 2024

Significant differences exist in medium- and long-term transaction prices across different regions. In 2024 , medium- and long-term transaction prices varied considerably across regions .

The average transaction price ranged from 0.231 to 0.505 yuan per kilowatt-hour, which was lower than the local coal-fired power benchmark price.

Prices were on average 4.7% higher, with 23 provinces (autonomous regions, municipalities) experiencing prices higher than the local average.

The benchmark price for coal-fired power generation is lower in 9 provinces (autonomous regions and municipalities) than the local benchmark price for coal-fired power generation.

Spot prices are generally lower than medium- and long-term prices. The mountain railway, which officially began operation in 2024...

The average spot prices of electricity in the western, Guangdong, Shandong, and Gansu electricity markets were as follows:

The prices are 0.314, 0.347, 0.316, and 0.249 yuan/kWh, respectively, with Shanxi's prices higher than those of the medium and long-term high-voltage power plants.

The average price of futures transactions was 1.1%, with Guangdong, Shandong, and Gansu prices lower than those for medium- and long-term transactions.

Average price reductions were 22.7%, 14.3%, and 9.8%; real-time market average prices were 0.324, respectively.

Prices in Shanxi were 0.341, 0.310, and 0.269 yuan/kWh, respectively, exceeding the average price in medium- and long-term transactions.

4.2%, Guangdong, Shandong, and Gansu were 24.1% and 24.2% lower than the average price for medium- and long-term transactions, respectively.

16.12.6



Figure 11. Average Price of Medium- and Long-Term Electricity Transactions in Various Regions in 2024

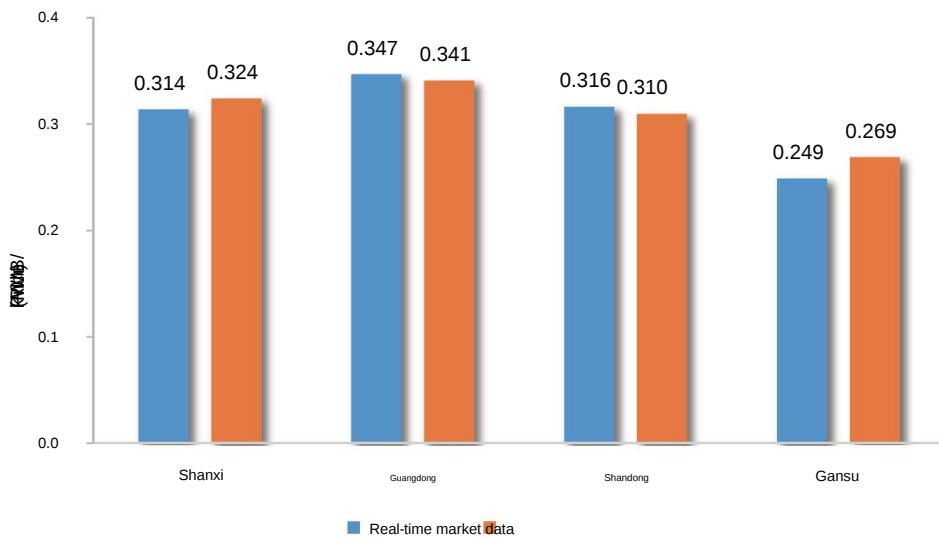


Figure 12. Spot electricity market prices in Shanxi, Guangdong, Shandong, and Gansu in 2024.

The volume and price of electricity purchased through power grid agents vary significantly across different regions. In 2024, the national power grid...

The electricity purchased through the agency amounted to 1.84 trillion kilowatt-hours, of which 0.88 trillion kilowatt-hours were priority generation.

0.96 trillion kilowatt-hours of electricity were procured through market mechanisms; the national power grid acted as an agent for electricity purchases.

The average price is 0.426 yuan/kWh, and the average purchase price of electricity through power grid agents in various regions is between 0.250 and 0.426 yuan/kWh.

Between 0.505 yuan/kWh.

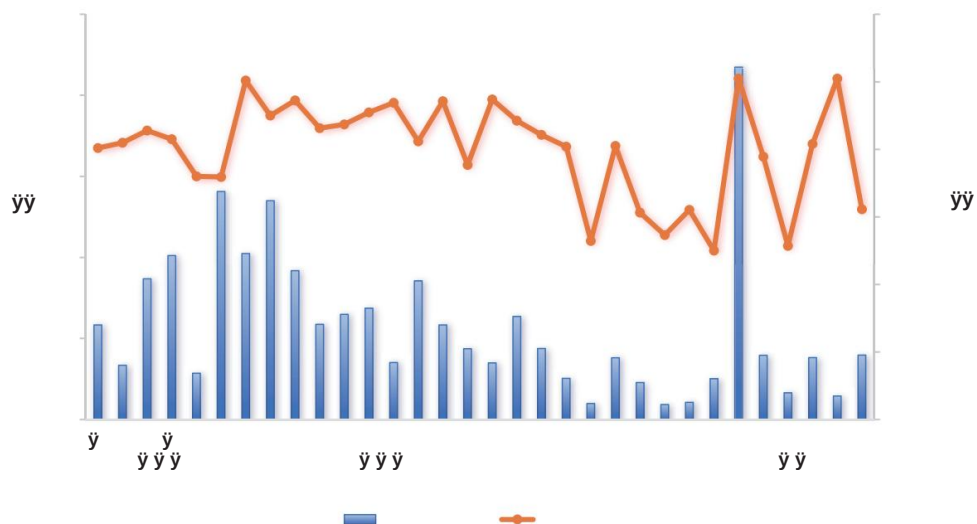


Figure 13. Electricity Purchase Prices by Power Grids in Various Regions in 2024

II. Review of the Progress and Achievements of the Electricity Market in 2024

In 2024, my country's electricity market construction made positive progress and significant achievements.

Effective. A multi-tiered, multi-category, multi-functional, and multi-entity electricity market system has been initially established.

The mechanisms of the medium- and long-term electricity market, spot market, and ancillary services market have been continuously optimized, forming a "1 + 6" model.

The basic rules system has been initially improved, and the construction of a unified national electricity market is being accelerated.

The medium- and long-term market functions of ensuring supply and stabilizing prices continue to play a role, while the spot market guides supply and demand.

Effective regulation and the exploration of new categories in the ancillary services market can help promote the stable operation of the power system;

The trading volume of green electricity and green certificates has increased significantly, effectively reflecting the value of green environments.

The power market has played a full role in promoting low-carbon transformation; the retail market has developed steadily.

New business models such as novel energy storage and virtual power plants are developing rapidly, contributing to the development of new power systems.

New momentum has been injected into the construction; the power market regulatory system has been continuously improved, effectively promoting

The standardized operation of the electricity market provides a strong foundation for the construction of a unified national electricity market.

support.

(I) The market system is being built at an accelerated pace, and a sound multi-level and multi-dimensional structure is being established.

1. Continued promotion of cross-provincial and cross-regional markets

The inter-provincial electricity spot market has officially commenced operation. The inter-provincial electricity spot market is based on cross-provincial...

Based on inter-provincial and inter-regional medium- and long-term electricity market transactions, the availability of inter-provincial and inter-regional channels can be utilized.

Day-ahead and intraday spot trading of transmission capacity. October 15, 2024.

The inter-provincial electricity spot market has officially commenced operation. This began during the trial operation in January 2022.

The scope of the inter-provincial electricity spot market has been continuously expanding from specific points to a wider area, and it now covers...

Covering the entire operating area of the State Grid and the Inner Mongolia West Power Grid, it has effectively promoted inter-provincial power interconnection.

Economic development, power supply security, and clean energy consumption. During the trial operation period, the inter-provincial electricity spot market...

The market has over 6,000 participating entities, covering various types of power generation entities, and has accumulated transactions of electricity.

The total electricity generation exceeded 88 billion kilowatt-hours, of which clean energy accounted for 44%.

Column 1

Inter-provincial spot markets have achieved remarkable results in ensuring supply and promoting transformation.

In 2024, the cumulative electricity volume traded in the inter-provincial spot market reached 37.6 billion kWh.

Kilowatt-hours, an increase of 18% year-on-year; average transaction price: 0.412 yuan/kilowatt

At that time, the price was 0.035 yuan/kWh higher than the average price in the medium and long term between provinces.

Inter-provincial spot market time-of-day price fluctuations effectively reflect electricity supply.

Given the current situation, significant progress has been made in ensuring supply and promoting transformation. Ensuring supply...

In this regard, the spot market effectively incentivizes various power supply companies through peak season high prices.

Peak power generation. During the summer of 2024, the largest inter-provincial spot mutual power exchange...

Power of 16.16 million kilowatts, especially during the extreme high temperatures in Sichuan and Chongqing in August and September.

During the period of the Dutch trade war, precise cross-regional support and mutual assistance were achieved between provinces in the spot market, effectively alleviating the impact of the pandemic.

This alleviated the power shortage in Sichuan, Chongqing, and other regions. Regarding promoting power transformation, inter-provincial...

Spot markets effectively promote the large-scale consumption of new energy. In 2024, new energy...

The source achieved 9.8 billion kilowatt-hours of electricity trading through inter-provincial spot transactions, a year-on-year increase.

20%, increasing the utilization rate of new energy by 0.6 percentage points.

The system for inter-provincial and inter-regional medium- and long-term power trading has been further improved. (Beijing Power Exchange)

Implementation Rules for Inter-regional and Inter-provincial Medium- and Long-Term Power Transactions (2024 Revised Draft)

It will be officially implemented on July 1, 2024, with implementation details focusing on the medium- and long-term market.

Key aspects include continuous operation, promoting the consumption of new energy sources, and ensuring system safety.

Further improve the transaction mechanism, optimize business processes, and innovate inter-provincial multi-channel centralized...

Optimize trading to improve the efficiency of large-scale resource allocation. Guangzhou Power Exchange

In April 2024, the center issued the "Southern Region Inter-regional and Inter-provincial Medium and Long-Term Power Transactions".

The "Rules" further regulate inter-regional and inter-provincial medium- and long-term electricity transactions in the southern region, and promote...

Actively implement the national strategy of transmitting electricity from the west to the east, promote the consumption of clean energy, and advance the construction of a unified system.

An open, competitive, and orderly southern regional electricity market. Covering the State Grid and Southern Power Grid.

A preliminary flexible mutual assistance trading mechanism across operating areas between the Fangshan Power Grid and the Mengxi Power Grid has been established.

In 2024, flexible mutual assistance transactions between the State Grid and China Southern Power Grid will be launched at the Yunxiao DC transmission line.

Building upon the existing annual market transaction of 600,000 kilowatts of power transmission from Guangdong to Fujian, Tong

Based on monthly and intra-month transactions, Guangdong will increase its shipments to Fujian by 1.4 million kilowatt-hours during the summer evening peak season.

For the first time, the Yunxiao DC transmission line achieved a full-capacity power transmission of 2 million kilowatts from the Southern Power Grid to the State Grid.

During the summer power season, the Inner Mongolia West Power Grid, for the first time, sourced electricity from the State Grid through inter-provincial medium- and long-term transactions.

Purchase electricity from the grid operation area.

The development of the Southern Regional Electricity Market is accelerating. The Southern Regional Electricity Market covers a wide range of areas.

The five provinces (regions) of Shandong, Guangxi, Yunnan, Guizhou, and Hainan form a unified regional system.

The basic framework of the medium- and long-term, spot, and ancillary services markets. (Completed throughout 2024)

The trial settlement process was completed in 5 rounds, totaling 53 days, and in November, the trial settlement for the entire month was completed for the first time.

During the trial operation period, the weighted average price of the entire grid's power generation side clearing for the whole month was 0.315 yuan/kWh.

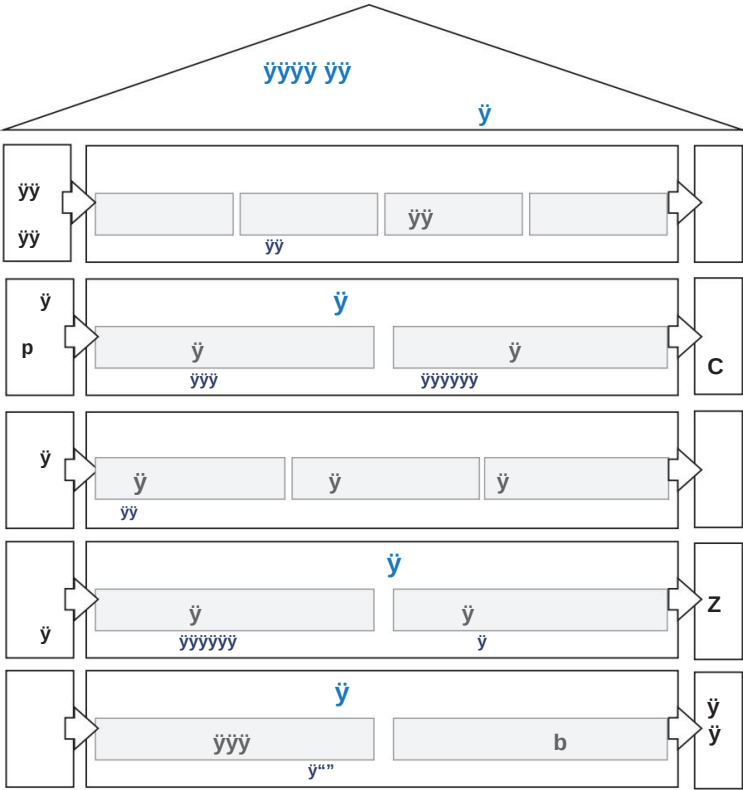


Figure 14. Southern Regional Market System Architecture Diagram

The daily price trend of watts is consistent with the market supply and demand trend, through the regional spot market.

The field achieved an additional 3.1 billion kilowatt-hours of electricity transmission between provinces.

Column 2

Significant progress has been made in the construction of the Southern Regional Electricity Market.

The number of registered operators in the Southern Regional Power Market exceeded [a certain number] in 2024.

200,000 companies, with market-based electricity sales accounting for 72.5% of total electricity sales; West

The amount of electricity transmitted from eastern China reached 238.4 billion kilowatt-hours, setting a new historical record.

Market development continues to advance. Coordinating regional collaboration with provincial specialties.

Color, formulated according to the principle of relative independence and mutual connection, regional and

Detailed implementation rules within the province (region) will form a "1+N+5X" series.

Rules. Give full play to the role of resource allocation, and implement preferential policies across provinces and regions.

Based on the existing power generation plan, conduct cross-provincial and cross-regional market-based transactions to promote...

Promote inter-provincial surplus and shortage adjustment and clean energy consumption; better develop the intra-provincial market

It plays a fundamental role in ensuring the basic needs of the local power economy and society.

The ancillary services market covers a variety of products, including frequency regulation, standby, and peak shaving.

Breakthroughs have been achieved in key technological areas. The "Tian" power solver has been successfully developed.

"Power" was included in the National Energy Administration's list of the first set of major technical equipment.

Breaking foreign technological monopolies and supporting the world's largest regional spot market

To meet market computing demands, over 6,000 nodes across five provinces (regions) will be deployed, with each node having 15 nodes per node.

Dynamic clearing every minute.

The Yangtze River Delta power market got off to a smooth start. On July 1, 2024, the Yangtze River Delta...

The electricity market has been officially launched, establishing a system of "mutual power assistance, peak-shifting complementarity, and capacity redundancy."

The inter-provincial and municipal electricity mutual assistance market mechanism of "supply and demand interaction" covers Shanghai and Jiangsu.

Jiangsu, Zhejiang, Anhui, and Fujian provinces and municipalities have launched initiatives to add surplus demand-side resources.

Mutual aid transactions, surplus new energy consumption mutual aid transactions, and other trading varieties should be fully explored.

Utilizing resources from both sides within the region will further enhance the power supply security of the Yangtze River Delta.

New energy consumption capacity. During the peak summer season of 2024, the highest power consumption in East China...

Electricity load hit a record high for the sixth time, reaching 421 million kilowatts, a year-on-year increase of 12.4%.

The Yangtze River Delta power market has effectively alleviated the power shortage during peak hours and supported local development.

Power supply guarantee.

Column 3

The Yangtze River Delta power market plays a positive role in ensuring supply and promoting transformation.

The Yangtze River Delta power market is based on inter-provincial and inter-city power exchange transactions.

Use economical and effective market-based means to ensure peak-hour service in various provinces and cities.

Balanced power supply, promote the inter-provincial consumption of new energy sources, and support the power supply in the Yangtze River Delta region.

The integrated development of power has laid a solid foundation and achieved initial results.

In 2024, the peak power supply for inter-provincial and inter-city mutual assistance reached 1041.

Tens of thousands of kilowatts, providing the largest off-peak capacity from outside the province to Zhejiang, Anhui, Shanghai, and Jiangsu respectively.

Supporting power output of 5.26 million, 2.00 million, 7.35 million, and 6.53 million kilowatts; mutual assistance and peak shaving.

The maximum power capacity reaches 10.66 million kilowatts, supporting Zhejiang, Anhui, Shanghai, Jiangsu, and other provinces.

The maximum regulating power in Fujian are 230, 500, 50, 677, and 100 respectively.

Tens of thousands of kilowatts, reducing the amount of wind and solar power curtailed by 1.4 billion kilowatt-hours throughout the year.

Inter-provincial resource sharing on the demand side is crucial for the power market in the Yangtze River Delta region.

Key varieties for inter-city mutual assistance, utilizing various provinces during the peak summer season.

The city's peak load occurs at different times, achieving hourly-level peak shifting.

Mutual assistance and support. On July 22nd and July 31st, 2024, [the following occurred]...

The triangular surplus demand-side adjustable resource exchange transaction was launched twice.

A total of 47 business entities participated, with a cumulative transaction volume of 36.1 kWh of electricity.

10,000 kilowatts.

Inter-provincial mutual assistance in the Northwest and Central China (Eastern four provinces) regions is progressing steadily. Northwest

Regional innovation involves conducting flexible, medium- and long-term inter-provincial transactions, using a "capacity-for-energy" model.

The effective power supply support for Qinghai during peak summer and winter periods was 17.6 and 21.7 respectively.

One hundred million kilowatt-hours of electricity were supplied to support Shaanxi's peak power demand of up to 1.3 million kilowatts, effectively...

To cope with the heavy load, give full play to the mutual assistance and resource sharing among provinces in the Northwest region.

Optimizing resource allocation. Central China (Eastern four provinces) continues to improve point-to-point network transactions.

The model promotes sustainable development in the Central China region through a short-cycle, normalized, and continuous trading mode.

Renewable energy consumption and power supply security: total electricity transaction volume reached 2.864 billion kilowatt-hours for the year.

With a maximum mutual power capacity of 1.1 million kilowatts, the power resources can be distributed to a wider range.

Shared benefits within the area.

2. Market development within the province has entered a fast track.

As of the end of 2024, four provincial-level provinces—Shanxi, Guangdong, Shandong, and Gansu—had [achieved certain goals].

The commodity market has officially commenced operation; four provincial-level markets in Inner Mongolia, Hubei, Zhejiang, and Fujian have now...

The commodity market is conducting a trial run of continuous and uninterrupted settlement; Sichuan, Anhui, Shaanxi, Liaoning

Nine provincial-level spot markets, including Ningxia, Chongqing, Hunan, Ningxia, Jiangsu, and Hebei Southern Power Grid.

The site has completed trial operation with settlements for more than a full month; Henan, Jiangxi, Shanghai, Jilin,

Seven provincial-level spot markets, including those in Qinghai, Heilongjiang, and Xinjiang, have completed short-cycle settlement trials.

Operation. Meanwhile, the province's medium- and long-term electricity market achieved full coverage, and the electricity...

The long-term trading system has effectively played its role as a "ballast"; the market trading mechanism has been continuously improved.

Shanxi, Sichuan, Chongqing, Liaoning and other regions have revised and issued regulations for medium- and long-term electricity transactions.

Therefore, the ancillary services market is becoming increasingly sound, with full coverage of the provincial ancillary services market.

Based on this, various regions actively promoted the participation of diverse business entities, and the Guizhou Provincial Energy Bureau issued a document.

"Implementation Plan (Trial) for New Energy Storage Participation in Electricity Market Transactions in Guizhou Province", National

The Zhejiang Regulatory Office of the National Energy Administration, in conjunction with the Zhejiang Provincial Energy Bureau, issued the "Guidelines for Virtual Power Plant Participation in Zhejiang".

Pilot Program for the Electricity Ancillary Services Market.

Column 4

Development of spot markets in some provinces

Shanxi: Shanxi became my country's first [province/region] on December 22, 2023.

The electricity spot market will be transitioned to full operation. After full operation, the mountain...

The West will further improve the mechanism for new types of business entities to participate in market transactions.

Distributed photovoltaic power plants participate in green electricity exchange through aggregation and agency methods.

Yi, distributed new energy has achieved a breakthrough in entering the market.

Guangdong: Electricity Settlement Volume in Guangdong's 2024 Electricity Spot Market

42.15 billion kilowatt-hours, accounting for a significant portion of the total electricity consumption of direct trading users in the entire market.

10.7%. Guangdong is promoting new voltage levels of 220 kV and above.

All energy sources participate in the spot market, establishing a system where "all electricity volume is quoted and bid in the spot market,

with settlement based on base electricity volume plus spot market deviation."

Market mechanisms; promoting independent energy storage power stations to participate in the spot market through quantity and price quotations.

Simultaneously establish a connection mechanism with the regional FM market to achieve unique [operation/operation].

The business model of "one-in-one multi-use and time-sharing reuse" for energy storage has been implemented.

Shandong: In 2024, facing the seasonal challenges caused by the characteristics of new energy power output...

Due to seasonal and time-sensitive electricity price fluctuations, independent energy storage and new energy sources have been established successively.

The mechanism for the energy source and its associated energy storage consortium to participate in spot market trading.

Of these, 34 independent energy storage power stations are participating in the market, with a total capacity of 373.8.

Tens of thousands of kilowatts, effectively smoothing out fluctuations in new energy output. At the same time, effectively...

Guide user-side response and leverage the advantages of surplus and deficit mitigation in the large power grid to expand provincial...

Inter-regional power trading will form a coordinated operation pattern of "source, grid, load, and storage".

Only by ensuring that the peak-valley price difference in the Shandong spot market continues to widen within a reasonable range

It also explored a new type of power system that maximizes the consumption of new energy sources.

Construction model.

Gansu: Gansu's electricity spot market adopts a centralized model and is fully operational.

Power optimization, dual-sided pricing for both generation and consumption, and pioneering the realization of new energy and...

Users submit volume and price quotes to participate in the spot market. Through the spot market and medium-to-long-term...

Coordinated trading throughout the year will guide 2.4 million kilowatts of load to participate in peak shaving.

The utilization rate of new energy power generation reached 92.88%, and the proportion of new energy power generation increased significantly.

Breaking 35%.

Mengxi: Mengxi combines high external power transmission volume and a high proportion of renewable energy.

Its characteristic is the adoption of a "single deviation" approach, which involves pre-clearing the market before settlement and does not involve settlement.

Settlement is based on the spot market model. The Mengxi Power Spot Market has been operating since 2022.

Starting in June of that year, the system transitioned to a trial run of continuous and uninterrupted settlement, continuously improving the city's [system/mechanism].

The market trading mechanism will continuously shorten the medium- and long-term trading cycle and refine its implementation.

Time-of-use pricing policy, establishment of peak capacity assessment mechanism, market development

The level of operational standardization is constantly improving.

(ii) The market mechanism is constantly improving and the connection method is being iteratively optimized.

1. Medium- to long-term market

The frequency of medium- and long-term transactions is continuously increasing. As of the end of 2024, most provinces...

Medium- and long-term trading has become a regular activity, with trading frequency and cycles approaching the daily trading schedule. (Hebei)

The smallest number of provinces (regions)/regions including Southern Power Grid, Inner Mongolia West, Shanxi, Shandong, and Jilin.

The trading cycle has reached day D-2, and Yunnan has reached day D-1.

Table 1 Frequency of Medium- and Long-Term Electricity Trading Cycles in Various Regions

Minimum period for medium- to long-term trading	Province (autonomous region, municipality) / region
month	Tibet
Within the month	Beijing, Shanghai
week	Tianjin, Hebei North, Guangxi, Hainan, Guizhou
D-3	Eastern Inner Mongolia, Qinghai, Gansu, Jiangsu, Chongqing
D-2	Hebei South Grid, Inner Mongolia West, Shanxi, Shandong, Jilin, Heilongjiang, Liaoning, Shaanxi, Ningxia, Xinjiang, Anhui, Zhejiang, Fujian, Hubei, Jiangxi, Henan, Hunan, Sichuan, Guangdong
D-1	Yunnan

2. Spot Market

The participants and methods of involvement in the spot market have become more diversified. This includes participation in new energy sources.

In terms of spot market methods, in 2024, there were 20 provinces (autonomous regions and municipalities)/regions.

New energy sources are participating in the electricity spot market. Among them, Guangdong, Shandong, and Gansu...

Fifteen provinces (regions) participated using a "volume-based price quotation" method; Shanxi, Shaanxi,

Three provinces, including Henan, participated by submitting quantities without offering prices; two provinces, Liaoning and Ningxia, participated.

Provinces (regions) can choose their own participation methods. Regarding user-side participation in the spot market,

25 provinces (autonomous regions and municipalities) that launched spot market settlement trial operations in 2024

In all regions, users participate in the electricity spot market. Local governments comprehensively consider the user side...

Factors such as the size and distribution of the main entities and their affordability of electricity prices were considered.

Different user-side market participation methods. Gansu, for example, uses a "volume-based pricing" method.

Participation; 18 provinces (autonomous regions and municipalities)/regions including Shanxi, Guangdong, and Shandong submitted reports.

Participation was based on a "quantity without price" approach, with six provinces/regions including Inner Mongolia West and Hubei participating.

Participate by submitting the quantity but not the price.

Table 2. Methods of New Energy Participation in the Spot Market in Various Regions in 2024

New energy participation in the spot market	Province (autonomous region, municipality) / Region (area)
Quantity and price quote	Guangdong, Shandong, Gansu, Western Inner Mongolia, Hubei, Southern Region, Anhui, Hunan, Jiangsu, Hebei Southern Power Grid, Jiangxi, Jilin, Heilongjiang, Xinjiang, Qinghai
Quantity not quoted in Shanxi, Shaanxi, and Henan	
Quantity quote / Price quote	Liaoning and Ningxia
Not participating in Zhejiang, Fujian, Sichuan, Chongqing, and Shanghai.	

Table 3. Methods of User Participation in the Spot Market in Various Regions in 2024

How users participate in the spot market	Province (autonomous region, municipality) / Region (area)
Quotation and pricing in Gansu	
Quantity not quoted	Shanxi, Guangdong, Shandong, Southern Region, Sichuan, Anhui, Shaanxi, Liaoning, Chongqing, Hunan, Hebei Southern Power Grid, Jiangxi, Jilin, Heilongjiang, Xinjiang, Henan, Ningxia, Shanghai
No quantity or price quote provided for Inner Mongolia, Hubei, Qinghai, Jiangsu, Zhejiang, and Fujian.	

3. Ancillary Services Market

The range of ancillary services is becoming increasingly diverse. At the regional level, North China, East China, and other regions...

Central, Northeast, and Northwest China mainly conduct regional peak-shaving trading to realize regional resource allocation.

Mutual support between surplus and shortage; regional frequency regulation and reserve systems in the south that are integrated with regional spot markets.

Transactions are used. Within the province, various regions mainly conduct transactions for ancillary services such as peak shaving and frequency regulation.

It is easy to adjust and enrich ancillary service transactions according to the actual operation needs of the power grid.

Explore the trading of commodities and resources that can be flexibly adjusted, such as those used for hill climbing.

Column 5

Southern Regional FM Ancillary Service Market Practice

The Southern Regional FM Ancillary Services Market was established on July 1, 2021.

It officially launched on [date], becoming the first domestic trading instrument using frequency modulation services.

The regional ancillary services market has significantly enhanced the power system in the Southern region.

Its frequency regulation capability provides strong support for the large-scale integration and consumption of new energy sources.

support.

In 2024, the overall operation of the FM ancillary service market in the Southern region...

The market is operating smoothly and orderly, with an average annual clearing price of 11.23 yuan/megawatt.

The total annual FM mileage is approximately 122 million megawatts.

With independent energy storage entering the market in February 2024, the Southern Region

Competition intensifies in the domain frequency modulation ancillary services market, and the overall market exhibits...

The trend of "increased volume and decreased price". 2024 Southern Region FM Auxiliary Service

The average clearing price in the service market decreased by 11.9% year-on-year, providing the same mileage.

This represents an increase of over 10%.

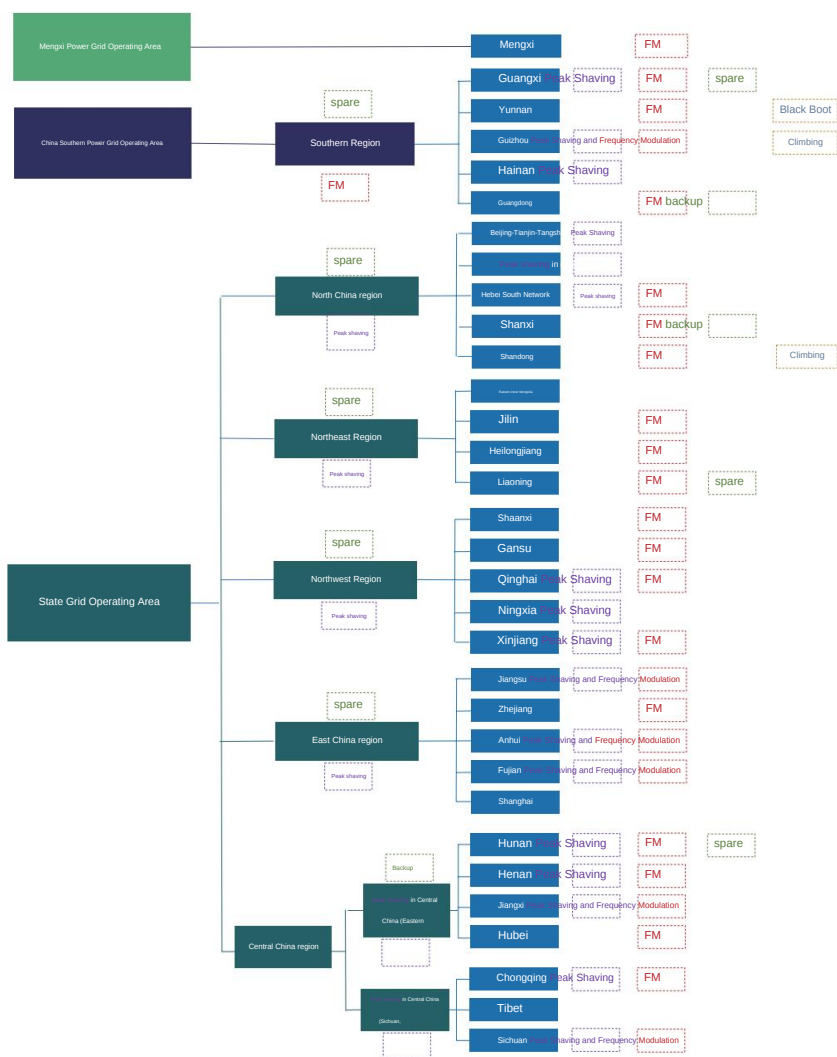


Figure 15. Varieties of my country's Power Ancillary Services Market

In 2024, the national electricity ancillary services market cost 40.25 billion yuan.

The user-side cost sharing was 1.11 billion yuan, accounting for 2.8% of the total cost.

The average price per kilowatt-hour on the power generation side is 0.0008 yuan. (Power generation side: coal-fired power, wind power)

The apportionment ratios for electricity, photovoltaic power, nuclear power, hydropower, gas power, and other power sources are as follows:

The percentages are 24%, 44%, 19%, 8%, 3%, 1%, and 1%, respectively, with the average percentage on the power generation side being 1%.

The price per kilowatt-hour is 0.0053 yuan.

By product category, peak shaving, frequency regulation, reserve, and other costs are as follows:

330.4, 68.9, 2.9, 0.3 billion yuan.

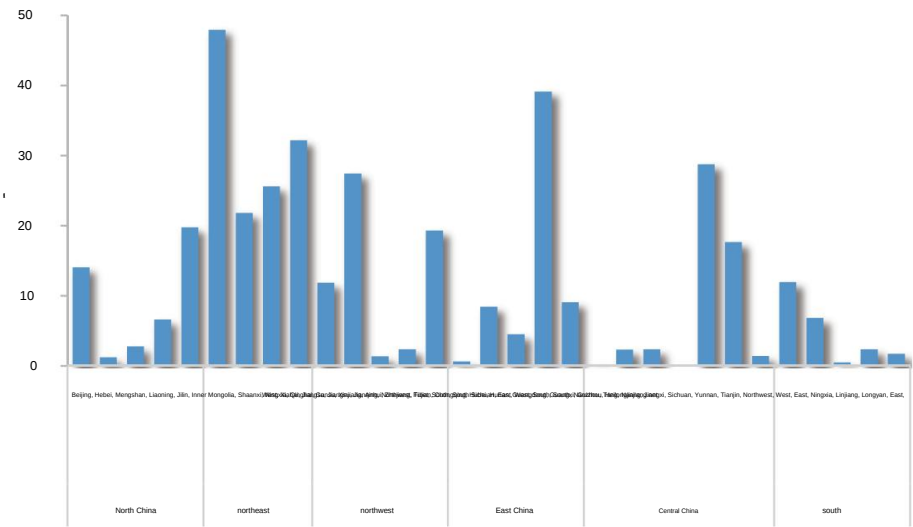


Figure 16. Costs of Ancillary Services Market in Various Regions in 2024

4. Market Integration

The medium- and long-term market, spot market, and ancillary services market should develop in a coordinated manner. (Electricity)

In the medium and long term, the market will solidify the foundation for ensuring supply and stabilizing prices; in the spot market, it will guide efficient adjustment of supply and demand.

The role of the festival and auxiliary service market in effectively supporting the stable operation of the system has been fully utilized.

The frequency and cycle of medium- and long-term market transactions are gradually approaching those before the opening of the spot market.

The uninterrupted operation of the futures market provides business entities with flexible opportunities to adjust their positions. (Shanxi)

In Shandong, Guangdong, and other provinces where spot markets have turned positive, short-term and medium-term market transaction prices...

Gradually converging with the spot market; the organization and operation of ancillary service markets are becoming more aligned with those of the spot market.

The peak-shaving market is gradually merging with the spot market in an orderly manner. April 19, 2024

National Energy Administration Shandong Regulatory Office, Shandong Provincial Development and Reform Commission, Shandong Provincial Energy Bureau

The Shandong Electricity Market Rules (Trial) were jointly issued, which will include provisions on the original medium- and long-term electricity contracts.

The rules for spot trading and other related matters have been revised and integrated to promote the development of medium- and long-term markets, spot markets, and ancillary service markets.

The market is organically integrated, encompassing transaction organization, measurement and settlement, information disclosure, and risk control.

Coordination and connection of each link.

Wholesale and retail markets are interconnected. Electricity sales companies serve their agents.

The role of load curve management has become more apparent, and the level of professional services has been further improved.

The retail market offers a wider variety of packages, and the proportion of packages linking wholesale and retail prices has increased.

Wholesale market price signals are better transmitted to users.

(III) The rules system has been initially improved and the institutional foundation has been effectively strengthened.

In 2024, the National Development and Reform Commission and the National Energy Administration continued to improve the market.

Rules and regulations were established, and the "Basic Rules for the Operation of the Electricity Market" (National Development and Reform Commission) was issued.

Order No. 20 of 2024 issued by the State Council, and the Basic Rules for Information Disclosure in the Electricity Market (National Standard).

(Energy Development Supervision [2024] No. 9), Basic Rules for Medium and Long-Term Electricity Transactions—Green Power

Special Chapter on Electricity Trading (NDRC Energy [2024] No. 1123), Electricity Market

Basic Rules for Registration (Guonengfa Regulatory Regulations [2024] No. 76), Electricity Market

The basic rules system has been initially established, laying the foundation for a unified national electricity market.

Base.

The "Basic Rules for the Operation of the Electricity Market" cover market participants and transaction types.

In terms of trading methods, electricity trading, and electricity ancillary services trading, further...

Further standardize electricity market behavior; the "Basic Rules for Electricity Market Information Disclosure" clearly state...

Determine the principles and methods of information disclosure, the content of information disclosure, and adjustments to the disclosed information.

Etc., regulate information disclosure in the electricity market; [and] the "Basic Regulations for Medium- and Long-Term Electricity Transactions"

The "Rules—Green Electricity Trading Chapter" standardizes green electricity trading methods and promotes...

Green electricity trading is better integrated into medium- and long-term electricity trading; [Electricity Market Registration]

The Basic Rules regulate the basic conditions and registration procedures for market participants.

process.

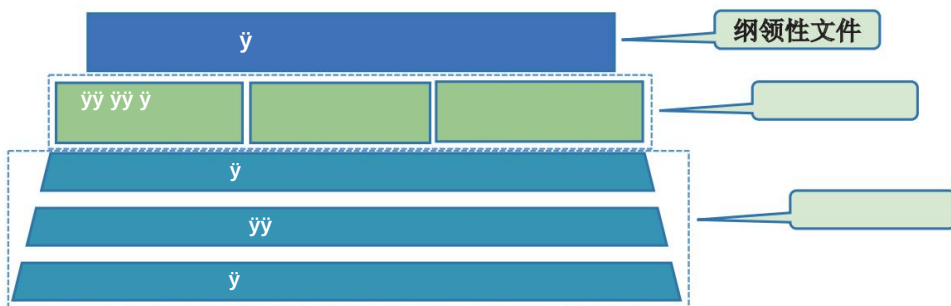


Figure 17. The "1+6" Basic Rules System of the National Unified Electricity Market

(iv) The energy transition continues to advance, and the volume of green certificates and green electricity is increasing significantly.

Continue to deepen the development of the green electricity market. This will contribute to my country's green, low-carbon, and high-quality economic development.

High-quality development, supporting enterprises to actively address green trade barriers and better participate in the international market.

In response to market competition, the Beijing Power Exchange Center organized research and compiled a multi-year green electricity trading plan.

A Power Purchase Agreement (PPA) template outlines the procedures for signing multi-year green electricity agreements.

The document provides actionable suggestions for key aspects such as breach of contract handling, aiming to improve user experience.

To ensure stable procurement of green electricity.

Green certificate trading volume quadrupled. In 2024, 4.46 million green certificates were traded nationwide .

The number of transactions reached 100 million, a year-on-year increase of 364%. Among them, 277 million were traded individually as green certificates.

169 million green certificates were issued for electricity trading. Individual trading of green certificates primarily involved inter-provincial transactions.

In 2024, 256 million green certificates were traded across provinces, accounting for approximately [a certain percentage] of the total number of individual transactions.

92.32%. Green electricity trading is mainly conducted within the province, and in 2024, the province's green electricity trading...

The number of green certificates issued for green electricity trading reached 152 million, accounting for approximately [a certain percentage] of the total number of green certificates issued for green electricity trading.

89.64%. Looking at the provincial breakdown, in 2024, Inner Mongolia Autonomous Region sold green certificates...

The largest scale, reaching 80.41 million, with Zhejiang Province having the largest scale of green certificate purchases, reaching 76.22 million.

Ten thousand.

The total volume of green electricity trading increased significantly. In 2022, the national green electricity trading volume...

The amount was 18.1 billion kilowatt-hours in 2020 and reached 69.7 billion kilowatt-hours in 2023. In 2024, following...

Following State Grid and China Southern Power Grid, Inner Mongolia West Power Grid has been approved to carry out green power development.

Power trading marks the full coverage of green electricity trading. In 2024, nationwide...

The various power trading centers have cumulatively completed 233.6 billion kilowatt-hours of green electricity transactions.

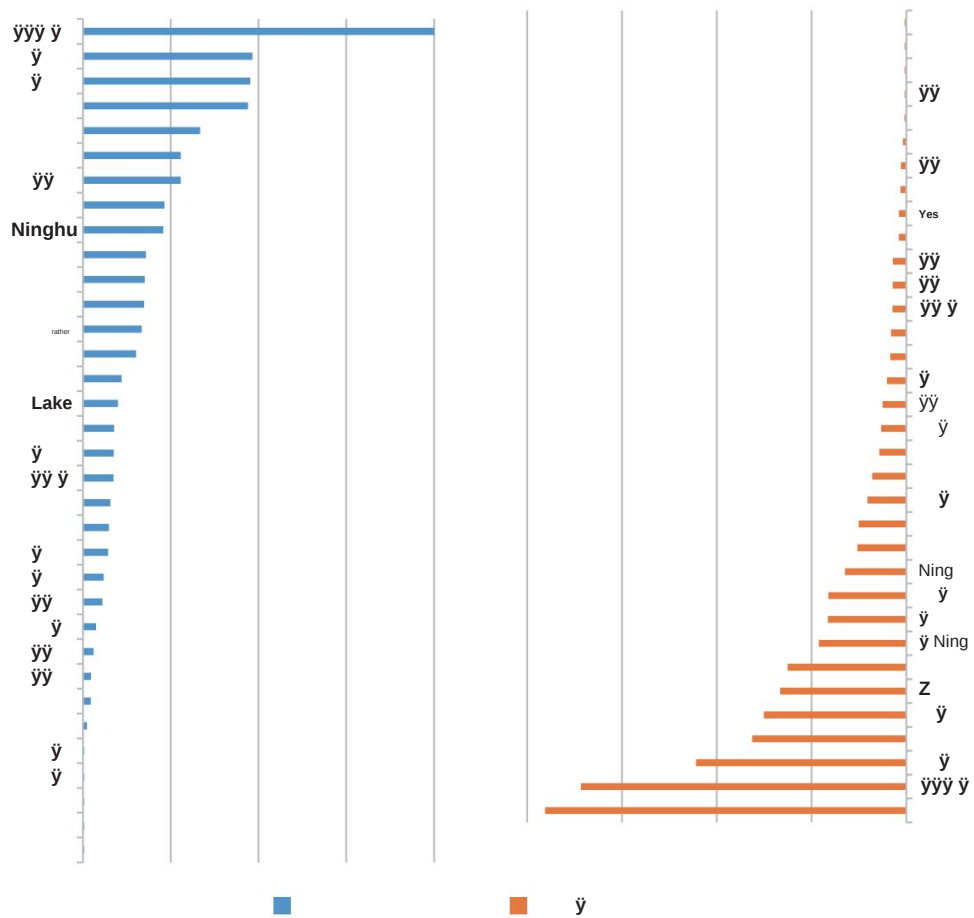


Figure 18. Green Certificate Sales and Purchases in Provinces (Autonomous Regions and Municipalities) Across China in 2024

Year-on-year growth of 235.2%. Among them, green electricity trading in the State Grid operating area...

The total electricity volume was 135.8 billion kilowatt-hours, and the green electricity trading volume in the Southern Power Grid operating area was 221 billion kilowatt-hours.

The green electricity trading volume in the Mengxi power grid operating area reached 75.7 billion kilowatt-hours.

In terms of time and region, the Inner Mongolia West region had the largest green electricity trading volume in 2024, followed by Hebei.

The north and Liaoning are next.

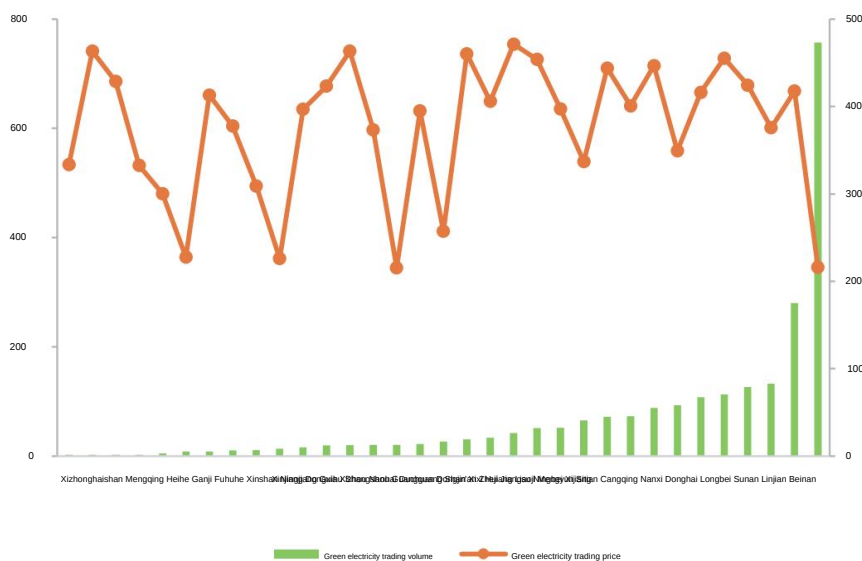


Figure 19. Green electricity trading volume and average transaction price across China in 2024

Column 6: International Chemical Companies in China Participating in Green Power Trading

BASF has been participating in green electricity trading in China since 2021;

In 2022, BASF procured 330 million kilowatt-hours of green electricity; in 2023...

In 2018, BASF signed long-term green electricity procurement agreements with State Power Investment Corporation and Mingyang Group.

Purchase agreement; In 2024, BASF signed a purchase agreement with China Energy Engineering Guangdong Institute.

A 25-year power purchase agreement (PPA) for BASF Zhanjiang

The integrated base will procure renewable electricity.

In 2024, to further promote cleaner production within the company,

BASF Shanshan Battery Materials Co., Ltd. has bases in Changsha and Ningxia.

Constructing distributed photovoltaic power stations. Furthermore, in 2024, BASF and China...

CLP China and Envision

Energy signed a 10-year nested power purchase agreement in order to...

Achieve 100% renewable energy utilization in Nanjing, Rudong, and Zhenjiang bases within the next ten years.

Energy supply.

(V) Precise market signals guide supply and stabilize prices.

The electricity market helps ensure power supply. Medium- and long-term electricity transactions account for a significant portion of the market.

The proportion of electricity generated in the field exceeds 90%, fully playing its role as a "ballast stone." (2024)

During the peak summer season, with electricity demand significantly higher than in previous years, relying on electricity...

In the medium- and long-term and inter-provincial spot markets, the maximum power transmission capacity of inter-regional channels reaches 142 million kilowatts.

14 million kilowatts of power will be provided to support East and Southwest China, effectively ensuring economic and social development.

The demand for electricity will increase.

High prices during peak periods incentivize thermal power plants to actively ensure power supply. This is especially true during peak electricity demand periods and new...

During periods of declining energy output, spot market prices rise in tandem, and thermal power companies...

Strengthening equipment operation and maintenance, optimizing plant power consumption, and other measures ensure that power supply can be maintained during peak and high-price periods.

Peak power generation ensures power supply. For example, in 2024, the Mengxi thermal power units generated [power].

Electrical resistance rate and unplanned downtime rate were respectively calculated from the rates before the continuous trial operation of the spot market.

The percentages of peak power generation capacity decreased from 13.7% and 4.7% to 4.9% and 2.4%, respectively, indicating a significant increase in peak power generation capacity.

Effectively ensure power supply during peak summer and winter seasons.

Price signals guide industrial and commercial users to stagger their electricity consumption during off-peak hours. A spot electricity market has formed.

The time-sharing price signal can effectively tap into the adjustment potential on the user side, which is beneficial for those with adjustment capabilities.

Industrial and commercial users with energy-saving capabilities can optimize production scheduling to allocate more production time to energy-saving processes.

Adjusting production plans to periods of low, zero, or even negative prices can help reduce costs.

The cost of electricity also plays a positive role in ensuring power supply and absorbing new energy sources.

For example, in 2024, Shandong Province guided the transfer of adjustable loads through price signals.

Achieving midday peak shaving of 5.08 million kilowatts and evening peak shaving of 2.25 million kilowatts, promoting new...

Energy consumption and improvement of the safe and stable operation of the power grid.

Overall energy costs have remained stable. In recent years, global energy supply has tended to...

Against the backdrop of tight supply and significant price fluctuations, my country has improved its electricity pricing mechanism and promoted...

Market-based trading and other measures will be used to maintain basic stability in electricity prices and achieve overall cost control of energy consumption.

Controllable.

Column 7

Shanxi spot market promotes comprehensive improvement in power supply capacity

Shanxi Province, relying on the electricity spot market, guides the close integration of power generation, grid, load, and storage.

By closely monitoring changes in supply and demand and fully leveraging its role in ensuring and regulating supply, it has been successful.

To cope with the highest load test in history.

First, it incentivizes peak power generation on the power generation side. It fully leverages the spot market...

The market price guidance role; during the summer and winter of 2024, the provincial allocation...

The operating capacity of generating units reached a record high. Power generation companies responded to price information...

No. , troubleshoot equipment in advance to reduce the capacity of generating units that are blocked from generating electricity. Shanxi

Since the spot market began operating continuously in April 2021, the entire...

The province's daily peak power generation capacity will increase by approximately 5%. Secondly, it will promote new main...

The entire system participated in ensuring power supply. In 2024, the gas-fired power units cumulatively started and stopped 510 [units/units] for peak shaving.

The number of units increased by 30% year-on-year; guiding 12 independent energy storage companies and 5 companies...

Virtual power plants participate in grid regulation through market-based mechanisms, playing a leading role.

Peak capacity is 1.5 million kilowatts. Thirdly, it guides the optimal use of load-side resources.

Electricity. The time-of-use electricity pricing in the spot market is being channeled towards retail users, guiding them towards...

The shift from "accepting price" to "responding price" involves proactively adjusting the use of...

Electricity consumption patterns show that the load shifts from the evening peak to the midday off-peak by approximately 200%.

Tens of thousands of kilowatts, through market-based methods, have achieved peak load shifting and valley filling, electricity

Supply capacity has been significantly improved.

(vi) The retail market has expanded steadily, and the volume of traded electricity has increased steadily.

The role of electricity sales companies has become more prominent. From 2021 to 2024 , the number of electricity sales companies conducting business...

The number of power companies increased from 1,889 to 2,613, with an average annual growth rate of approximately 11.4%.

The number of retail users represented by the agency increased from 317,600 to 653,500, with an average annual growth rate of

The rate is approximately 27.2%, and the average number of retail customers represented by electricity sales companies is approximately 250.

The number of electricity companies and the number of agents and retail users have maintained steady growth year by year.



Figure 20. Number of Retail Market Operators, 2021-2024

Electricity consumption in the retail market remained stable with a slight increase. From 2021 to 2024 , retail market transactions...

Electricity consumption increased from 2.41 trillion kilowatt-hours to 3.66 trillion kilowatt-hours, with an average annual growth rate of...

The growth rate is approximately 14.9%, and the market size continues to expand.

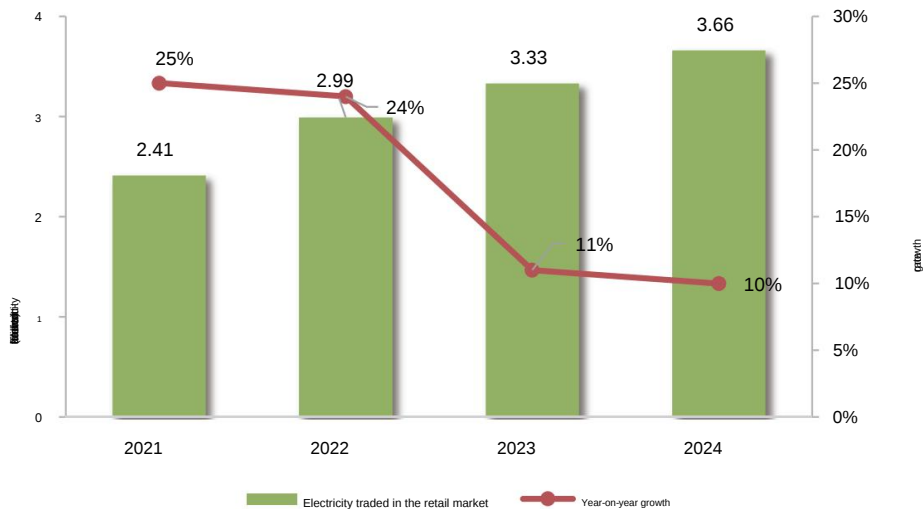


Figure 21. Retail market transaction volume and growth from 2021 to 2024

(vii) New types of business entities are flourishing and business formats are becoming increasingly diverse.

New energy storage technologies are finding more diverse ways to participate in the market. In 2024, China's new energy storage...

Energy storage participation in the electricity market is characterized by "a unified policy framework, but also regionally differentiated exploration."

Characterized by "diversified application of technology," through participation in the electricity market and ancillary services

Revenue is generated through multiple channels, including the market. Energy storage in Shandong and Guangdong uses a "volume-based pricing" method.

In order to participate in the spot market, Shanxi Energy Storage can choose to "report quantity and quote price" or "report quantity but not price".

Gansu Energy Storage participates in the spot market by "reporting quantity, not price" instead of "quoting price".

Spot trading, discharging during peak electricity price periods and charging during off-peak periods. Guangdong, Gansu, Shanxi, and other provinces/municipalities involved.

Energy storage in eastern regions can choose to participate in the spot market and frequency regulation market.

Virtual power plants participating in the electricity market is a beneficial attempt. (See the 2024 Energy Regulatory Work Plan)

The "Key Points" require that the demand side play a full role in systemic regulation and promote the use of resources.

New types of entities, such as home-side energy storage, virtual power plants, and load aggregators, are entering the electricity market.

Field. "National Energy Administration's Opinions on Supporting the Innovative Development of New Business Entities in the Power Sector"

The "Guiding Opinions on the Development of New Business Models" (Guonengfa Gai [2024] No. 93) proposes that new business models...

Market participants enjoy equal market status with other business entities, and new entities are encouraged.

All types of business entities participate equally in the electricity market. Various regions are actively exploring various trading methods.

Complementary product offerings, encouraging new business entities such as virtual power plants to participate in the electricity market,

Ancillary services market. The market has diverse operators, including Huaneng, State Power Investment Corporation, and others.

State-owned enterprises such as China Gorges Corporation and Beijing Energy Group include companies like Electric Butler, TELD, NIO, and Wanbang.

The companies include private enterprises such as digital companies, and foreign-invested enterprises such as UPM and KICHU.

Column 8: Gansu's New Energy Storage Participates in the Electricity Market

Gansu explores the establishment of a market mechanism conducive to the participation of new energy storage technologies.

The system provides commercial pathways for new energy storage in different scenarios: new energy storage

Able to obtain electrical energy in the electricity spot market through "low charging and high discharging"

Profits from the price difference are generated in the ancillary services market by providing frequency modulation services.

Compensation will be received. As of the end of 2024, Gansu's installed capacity of new energy storage...

With a capacity of 4.42 million kilowatts/11.53 million kilowatt-hours, new energy storage is available in its own...

In the case of active market participation, the average utilization hours in 2024

1146 hours, of which grid-side energy storage accounted for 2074 hours and power supply-side energy storage accounted for 2074 hours.

With 944 hours of energy storage, it basically achieves one charge and one discharge per day, with some days...

The goal is to achieve two charging and two discharging cycles.

In Gansu, over 80% of new energy storage is integrated with new energy sources.

It is characterized by "numerous points, small scale, and difficulty in control." To fully leverage...

Large-scale application of energy storage in power system balancing and renewable energy consumption

Gansu has innovatively applied a new type of energy storage coordinated control system, exploring and experimenting with various methods.

Pilot market-oriented and precise regulation of energy storage resources. Gansu Province, 2024.

The cumulative charging volume of new energy storage systems reached 2.091 billion kilowatt-hours, enhancing the development of new energy sources.

Utilization rate was 2.41 percentage points; maximum discharge power during peak electricity consumption periods.

3.23 million kilowatts, effectively alleviating the pressure on power supply. In Gansu New Energy...

The installed capacity of source units exceeds 64%, and the daily maximum output fluctuation exceeds 2000.

At a capacity of tens of thousands of kilowatts, this contributes to a safe and stable power supply and supports new...

Energy utilization rate is over 90%.

(viii) The regulatory system has been continuously improved and market governance has been gradually standardized.

Improve the rules and regulations for electricity market supervision. In November 2024, the 14th National People's Congress...

The 12th session of the Standing Committee of the National People's Congress reviewed and adopted the Energy Law, proposing to accelerate the establishment of...

A diverse, unified, open, competitive, and effectively regulated energy market

This system promotes the independent operation of natural monopoly segments and the market development of competitive segments in the energy sector.

Reform and strengthen the supervision and regulation of natural monopoly businesses in the energy sector in accordance with the law.

Control. In April 2024, the National Development and Reform Commission and the National Energy Administration formulated and revised the "Electricity..."

The Measures for Market Regulation (Order No. 18 of the National Development and Reform Commission, 2024) were promulgated to further regulate the market.

The responsibilities of electricity market regulation should be clarified in one step, and the supervision of various electricity market participants should be improved.

Management of content, focusing on maintaining order in the electricity market, and ensuring the unity and openness of the electricity market.

Openness, competition, and order.

Conduct special regulatory oversight of prominent issues in the electricity market order. Focus on key areas in the electricity sector.

The contradictions and prominent problems existing in the market-based trading and operation of electricity, the State

The National Energy Administration is conducting nationwide inspections covering market rule enforcement, market competition behavior, and information security.

Special supervision of the electricity market order, including information disclosure and reporting. This supervision addresses issues discovered during the supervision process.

The National Energy Administration issued the "Notice on Further Regulating Electricity Market Trading Behavior".

The "Notice on Relevant Matters" (Guoneng Zongtong Jianguan [2024] No. 148) comprehensively...

Implementing the national unified electricity market construction plan and promoting compliance among operating entities

Transactions, regulating market pricing behavior, conducting regular monitoring and analysis, and strengthening daily supervision.

The document proposes normative requirements in five aspects, including management.

A campaign was launched to rectify improper intervention in the electricity market. This was done to further clarify the role of administrative intervention.

The state should define the boundaries for determining pre-emptive actions, unify judgment standards, and clarify relevant work procedures.

The National Energy Administration has formulated the "Work Plan for Rectifying the Interference of Administrative Means in Electricity Market Transactions".

The "Guidelines (Trial)" establish a joint mechanism between the National Development and Reform Commission and the National Energy Administration.

It further clarified the criteria and procedures for judging inappropriate intervention behavior, providing a basis for continuous improvement.

This provides a basis for carrying out a special campaign to rectify the use of administrative means to interfere in electricity market transactions.

And guidance.

Column 9

Typical cases of crackdown on collusion in bidding and other behaviors among power companies

The Shandong Regulatory Office of the National Energy Administration has taken legal and regulatory measures against four power generation companies.

The industry organization investigated and made a decision regarding collusion in bidding among its power plants.

The total amount of the administrative penalty was 1.12 million yuan.

The Zhejiang Regulatory Office of the National Energy Administration, in accordance with laws and regulations, investigated a certain state-owned power enterprise.

Two subordinate power generation companies colluded to manipulate prices and engage in market manipulation.

An investigation was conducted, and an administrative penalty totaling 504,000 yuan was imposed.

The Central China Regulatory Bureau of the National Energy Administration conducted an investigation into a certain electricity transaction in accordance with laws and regulations.

The center indirectly reduces the deviation of electricity sales companies by adjusting the contracted electricity volume after the fact.

An investigation was conducted into the conduct during the assessment, and a fine of 460,000 yuan was imposed.

Administrative penalty.

Deepen the digital supervision of the electricity market. To accelerate the digitalization of the electricity market...

Digitalized supervision work will promote the normalization of digitalized supervision. (National Energy Administration)

The State Grid Corporation of China issued the "Notice on Promoting Digital Supervision of the Electricity Market" (Guoneng).

(Issued Supervision Document No. 84 of 2024), in accordance with the principles of "unified standards, data sharing, and phased implementation"

Following the principle of "development and continuous improvement," this guides various regions to establish scientific and technological systems suitable for their local conditions.

Learn a complete digital regulatory indicator system for the electricity market and continuously improve market supervision.

The integrity and synergy of the system; promoting the improvement of digital regulatory functions in the power market in various regions.

The design includes real-time monitoring of basic market data, risk warning, and online supervision.

Functions focused on meeting the needs of remote, real-time digital supervision of the electricity market;

Guide the regional offices of the National Energy Administration to establish and improve the digital supervision mechanism of the electricity market.

Establish a mechanism to explore and implement digital regulatory applications in the electricity market.

Column 10

Shandong is actively exploring digital supervision of the electricity market.

With the advancement of the electricity spot market construction, digital supervision has also been promoted.

Put on the agenda, taking into account the characteristics of the construction and operation of the Shandong electricity spot market.

Shandong has innovatively constructed a system encompassing 5 major categories and 247 features, building upon existing platforms.

The market supervision indicator system, comprising multiple indicators, provides a framework for digital supervision in various regions.

The system provides reference templates. The construction of a digital monitoring system will be promoted simultaneously.

The system includes six major modules: operation monitoring, behavior monitoring, and benefit monitoring.

This module enables market operation analysis, abnormal behavior identification, and risk identification.

Early warning and other functions.

By the end of 2024, Shandong's digital power market supervision system...

The system has been running stably for a year, and has accumulated access to entity declarations and market data.

1153 core data items, including operation and transaction settlement, were generated, forming a monitoring week.

26 reports were submitted annually, and 6 monthly reports were submitted monthly. The Shandong Regulatory Office of the National Energy Administration relied on...

Digital monitoring methods identified 31 indicators exceeding the threshold.

There were 22 leads regarding prominent issues in the electricity market order, mainly involving power generation.

Enterprises engage in practices such as centralized bidding and using high prices to circumvent regulations and take advantage of loopholes to eliminate defects.

Regulatory behavior, and the use of seasonality in the price difference between the medium- and long-term markets and the spot market.

Typical issues such as oversubscribed electricity arbitrage need to be addressed to prevent and control market risks.

The revision of rules and the enforcement of regulations provide a basis and support.

III. Key Tasks for Electricity Market Development in 2025

By 2025, a unified national electricity market system will be initially established, better enabling electricity to be used for...

It plays a role in promoting power supply, low-carbon transformation, and price stability. It forms a power...

The market's "1+6" basic rules system was established, and the power market ancillary services and metering rules were issued.

Settlement basic rules, revising the "Basic Rules for Medium and Long-Term Electricity Transactions", through the China Securities Regulatory Commission (CSRC)

In the long term, the market will better implement the inter-provincial priority power generation and consumption plan, forming a stable inter-provincial market.

The fundamental trend effectively connects inter-provincial medium- and long-term continuous trading and the spot market, promoting

Promote mutual assistance between surplus and shortage; effectively connect medium- and long-term and spot continuous trading within the province to achieve electricity

Gradual balance regulation of power and electricity supply to solidify the foundation of power supply security within the province; improving the medium

Long-term transaction flexibility, supporting local governments to improve annual, monthly, and monthly [monetary] standards based on their specific circumstances.

Internal adjustment mechanisms for contracts with different periods encourage relevant business entities to adjust them according to their own circumstances.

To meet the needs, we can flexibly conduct transactions such as the transfer and modification of medium- and long-term contracts, thereby improving contract performance.

Contract performance quality. Cross-grid power trading has become routine, unifying the market.

Rules, trading instruments, and trading timing will facilitate the nationwide distribution of electricity resources.

Optimized configuration. Basic coverage of the spot market, including the southern regional electricity market.

The market has entered a trial phase of continuous settlement, and all provincial-level spot markets have fully implemented continuous settlement.

Strengthen the effective connection between the medium- and long-term market, the spot market, and the ancillary services market.

2024 China Electricity Market Development Report

Promote the full participation of renewable energy electricity in the market and improve the pricing policy for ancillary services.

Policies and trading rules should be formulated to accelerate the construction of a market pricing mechanism adapted to the new power system.

Establish a power market evaluation system and strengthen horizontal cooperation in the construction of local power markets.

By comparing and analyzing progress over the years, we can guide the orderly development of the market. Further improvements are needed.

Improve the electricity market regulatory system and continuously carry out comprehensive supervision of the electricity sector.

Special supervision of market order, and routine investigation of improper local interference in the electricity market.

Easily rectify illegal activities, innovate digital supervision methods, and give full play to the role of electricity market management.

The management committee, industry self-regulation, market operation institutions, market monitoring, and regulatory agencies are all involved.

The role of industry regulation in the "three lines of defense" for electricity market operation, promoting the implementation of medium- and long-term...

A mechanism for incentives and constraints in the signing and performance of power trading contracts is in place to prevent market risks and ensure [the stability of the market].

To maintain market stability, we must deepen market credit supervision and enhance the integrity and trustworthiness of business entities.

consciousness.

IV. Major Events

On January 9, 2024, the National Energy Administration issued the "Energy Regulation in 2024".

The "Key Points of Work" (Guonengfa Supervision [2024] No. 4) proposes to systematically promote the nationwide...

Construction of a unified electricity market system.

On January 31, 2024, the National Energy Administration issued the "Electricity Market Information..."

The "Basic Rules for Disclosure" (Guonengfa Regulatory Bureau Document No. 9 [2024]) further regulates electricity...

The market information disclosure should be standardized, and the principles and methods of information disclosure should be clarified.

Information disclosure content, adjustments to disclosed information, information confidentiality and sealing, etc.

content.

On February 7, 2024, the National Development and Reform Commission and the National Energy Administration jointly...

The "Notice on Establishing and Improving the Market Price Mechanism for Electricity Ancillary Services" was issued.

(Revised Price Document [2024] No. 196) to regulate peak shaving, frequency regulation, and backup services.

Pricing mechanism for ancillary services.

On April 12, 2024, the National Development and Reform Commission issued the "Electricity Market Supervision..."

The "Administrative Measures" (Order No. 18 of the National Development and Reform Commission in 2024) further clarify...

The regulatory responsibilities of the National Energy Administration and its dispatched agencies should be expanded to include a broader scope of oversight and standardization.

The behavior of various market participants should be assessed, and the market rules system should be improved and supplementary regulatory measures should be added.

On April 25, 2024, the National Development and Reform Commission issued the "Operating Regulations of the Electricity Market".

The Basic Rules for Implementation (Order No. 20 of the National Development and Reform Commission, 2024) shall be implemented nationwide.

The "1" in the "1+6" basic rules system for the electricity market has been officially implemented, providing a basis for...

The construction of a unified national electricity market system provides a foundation for institutional rules and regulations.

On April 25, 2024, the National Energy Administration issued the "Notice on Carrying Out the 2024..."

Notice on Special Supervision of Outstanding Issues in the Electricity Market Order in 2023 (National Energy Comprehensive Supervision)

(Document No. 61 of 2024) This document outlines a nationwide campaign to address prominent issues related to the order of the electricity market.

Specialized supervision will be conducted, focusing on the implementation of trading rules and restrictions on market competition.

The situation, information disclosure and reporting, and other prominent issues in the electricity market order were investigated.

Regulation.

On June 17, 2024, the Shandong Electricity Spot Market officially commenced operation.

It became the first in 2024, and the third nationwide, to officially commence operation.

Provincial-level electricity spot market.

On July 1, 2024, the Yangtze River Delta Power Market and Inter-provincial Power Mutual Aid...

The transaction has officially commenced. It is based on principles of power mutual assistance, peak-shifting complementarity, capacity redundancy, and supply and demand.

The overall approach to interaction in the Yangtze River Delta power market encompasses adjustable resources on the surplus demand side.

The trading includes six varieties such as Yuan, Fuyu New Energy Consumption, etc.

On July 24, 2024, the National Development and Reform Commission and the National Energy Administration issued a document.

"Basic Rules for Medium- and Long-Term Electricity Transactions—Special Chapter on Green Electricity Transactions" (National Development and Reform Commission Energy)

Document No. 1123 of 2024 clearly stipulates that the principle should be "primarily within the province, supplemented by cross-provincial/regional cooperation".

In accordance with the principle of promoting the orderly development of green electricity trading and meeting the green electricity needs of electricity users,

Purchase demand.

On July 29, 2024, the National Energy Administration held a meeting in Beijing to launch the Ministry of Energy's...

The State Administration of Taxation conducted on-site supervision of the comprehensive regulatory work in the power sector in 2024, in Heilongjiang and Anhui provinces.

Six provinces (regions), including Anhui, Shandong, Guangxi, Sichuan, and Ningxia, have launched a new round of electricity...

Comprehensive supervision of the power sector, focusing on coal-fired power planning, construction, upgrading and renovation, and grid fairness.

Open access services, power grid companies leveraging their natural monopoly advantages to expand into downstream competitive environments

Extension of power supply, power dispatch and trading and market order, renewable energy consumption, and "obtaining"

Measures to improve the level of "getting electricity" services and accelerate the construction of a unified national market have been implemented.

Supervision will be carried out in seven aspects, including...

On September 5, 2024, the Gansu Electricity Spot Market officially commenced operation.

The meeting held in Lanzhou marks the start of a trial operation for continuous and uninterrupted settlement in Gansu's electricity spot market.

It will be put into formal operation after 40 months of operation.

On September 13, 2024, the National Energy Administration issued the "Registration Base for the Electricity Market".

This rule (Guonengfa Regulatory Regulation [2024] No. 76) further regulates the market.

Improve the management level of business entity registration and address the access barriers encountered in practice across different regions.

Vague standards, set entry barriers, inconsistent registration processes, and multiple operating entities

Issues such as registration.

On October 15, 2024, after nearly 1,000 days of practical testing, the inter-provincial...

The electricity spot market has officially commenced operation. The inter-provincial electricity spot market covers the national electricity market.

The power grid and the Mengxi power grid operating area can effectively reflect market supply and demand, forming a trend of energy price increases.

A market-based pricing mechanism that allows for price declines is an important component of a unified national electricity market.

part.

On October 25, 2024, the National Development and Reform Commission held a meeting in Nanchang, Jiangxi Province.

2024 China Electricity Market Development Report

A field meeting was held to promote the construction of a unified national electricity market. (National Development and Reform Commission Party Committee)

Li Chunlin, member of the leading group and deputy director, and Song Hong, member of the Party Leadership Group and deputy director of the National Energy Administration.

Kun attended the meeting and delivered a speech. The meeting fully affirmed the construction of a unified national electricity market.

The significant progress achieved requires all relevant parties to focus on accelerating the development of electricity.

Strengthen the development of the spot market, promote the continuous operation of the medium- and long-term market, and enhance the inter-provincial market.

Large-scale resource allocation capabilities and promoting the connection and coordination of electricity markets at all levels and of all types are key aspects.

Key links, continuously improve the electricity market system and trading mechanism, and accelerate the construction of a system adapted to the needs of the people.

The new power system requires a unified national power grid to better serve high-quality development.

market.

On November 28, 2024, the National Energy Administration issued the "Opinions on Supporting Electricity..."

Guiding Opinions on the Innovative Development of New Business Entities in the Power Sector (National Energy Development Law Reform Commission)

Document No. 93 of 2024 clarifies the definition and scope of new business entities and standardizes new business entities.

Requirements for the scheduling and operation management of new business entities, and optimization and improvement of market registration for new business entities.

Registration, trading mechanisms, and metering and settlement will promote fair participation of new business entities in the electricity sector.

The market promotes the innovative development of new business entities through market mechanisms.

On November 29, 2024, under the overall coordination of the National Energy Administration, China

The China Electricity Council, together with several other organizations, jointly released the "National Unified Electricity Market" document.

Development Planning Blue Book.

On November 30, 2024, the Southern Regional Electricity Market completed its first full-month electricity trading session.

The settlement trial operation will impact the market mechanism design and operation of the Southern Regional Electricity Market.

The weaving process and technical support capabilities were fully validated, laying the foundation for future transition to continuous weaving.

This lays the foundation for trial operation and even formal operation of the settlement system.

On December 15, 2024, the National Energy Work Conference for 2025 was held in Beijing.

The meeting was opened. Zheng Shanjie, Secretary of the Party Leadership Group and Director of the National Development and Reform Commission, attended the meeting and delivered a speech.

At the meeting, Wang Hongzhi, Secretary of the Party Leadership Group and Director of the National Energy Administration, delivered a work report. The meeting emphasized...

We will continue to deepen the implementation of the new energy security strategy and accelerate the planning and construction of new energy-saving technologies.

Energy system, accelerate the construction of a unified national electricity market, and strive to improve regulatory efficiency.

And at a high level, the goal is to initially establish a unified national electricity market by 2025 as a key energy industry development objective.

Make it a key point.