California Debt and Investment Advisory Commission

Webinar Transcript
The Public Investment Portfolio: Utilizing Repurchase Agreements, Reverse Repos and Securities Lending Agreements
August 5, 2015

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As an alternative short-term investment structure, public agencies may use repurchase and reverse repurchase agreements to meet cash flow needs. Local government agencies may also use security lending agreements to earn additional income for the public investment portfolio. This is the final webinar on money markets and will examine the mechanics of these agreements.

Disclaimer: The information presented in this webinar series is intended to assist public investment professionals. The content presented is informational and does not constitute investment advice or the recommendation to invest in any or all of the investment instruments discussed. When choosing an investment instrument for a public portfolio, the whole portfolio, investment policy, suitability, financial needs of the public agency and any associated risks should be considered. In addition, the information in each webinar is set to reflect the period in time in which it is presented and any changes that may affect any of the instruments discussed, such as legislation, reform or market conditions, or that may alter the relevancy of any of these webinars, will not be reflective in the post archival recordings. In such instances, viewers should be advised to use the information only as a reference as no updates to the recordings will be made. Please consult the California Debt and Investment Advisory Commission's publication, *Local Agency Investment Guidelines* for any interpretive updates.

Title Slide – The Public Investment Portfolio: Utilizing Repurchase Agreements, Reverse Repos and Securities Lending Agreements

Linda Louie: Good morning, everyone. And welcome to the California Debt and Investment Advisory Commission's webinar, The Public Investment Portfolio. This is *Money Markets – Utilizing Repurchase Agreements, Reverse Repos and Securities Lending*. My name is Linda Louie, and I'm the education manager at CDIAC. Before we proceed with our broadcast, if you're experiencing any technical problems, please contact GoToMeetings at 1-800-263-6317. Again, that's 1-800-263-6317 or you can try the website at the address as you see on the screen.

Utilizing Repurchase Agreements and Reverse Repos and Securities Lending Agreements is the fifth component of a nine part webinar series on public investments that CDIAC has scheduled to run through the summer. Each webinar focuses on the category of statutorily authorized investments in a way that will help you to understand many of the features and risks and how you might go about assessing whether or not a particular investment meets or fits into your agency's investment policy objectives.

Thank you for joining us today and we hope that you will be able to participate in each webinar in the series to gain a fundamental understanding of the full spectrum of investment options for public investment portfolios. However, we do understand that schedules may not permit participation in every webinar. So to help you broaden your knowledge of other investment management topics, CDIAC has a different number of resources and recommended readings available to you on our website. And you can visit them on the CDIAC education web page. For example, CDIAC has published an issue brief for this webcast on securities lending agreements. The presentation slides for today's webinars are also available on CDIAC's website on the address on the screen. All webinars in this series will be posted to the CDIAC website two to three weeks following each of the nine broadcasts. And may we point out the 2015 edition of the CDIAC *Local Agency Investment Guidelines* and the *California Public Investment Primer* are currently linked on CDIAC's main web page and at the address listed on the screen.

Please note if you'd like to view the live captioning on the program, you may paste the address on the screen on to your browser or click on the link in the chat section at the bottom of your control box, not on the screen. If you would like to receive a certificate of attendance for CPE credit, you must be registered and logged into the webinar under your own name, and a certificate will be emailed to you within about a week. During this webinar, you will be able to submit questions to the faculty by using the box marked "Questions" near the bottom of your control panel. The speakers will address some of your questions during the presentation and some may need to be held until the Q&A session at the end of the webinar. However, we try to address your questions in a timely manner to emphasize points for your education. If we run out of time for all questions, we will follow up with responses on the CDIAC website with our faculty input. Before I introduce our speakers, I ask you to take note of an important note on the screen, and it is a disclaimer.

Slide 2 – Disclaimer **(03:24)**

Linda Louie: The presentation today is informational and it does not constitute investment advice or recommendations. There may be many risks, policy, portfolio and suitability factors that must be considered by an agency prior to making an investment decision. So the webinar is presented as of Wednesday, August 5, 2015, today, and in its current context. So keep in mind the replay of the webinar that will be posted will not reflect any changes in investment authority or market conditions which may occur after today and changes that may reflect the suitability of an investment as well. Today's webinar is designed to provide you with an overview and an understanding of the money market with respect to a few types of short-term money market instruments as in the investment choice for the public investment portfolio under government code. You will get a sense of what governments can do and cannot do when investing in repurchase agreements or reverse repos and securities lending, as well as understand the different dynamics between collateralized loans and borrowing for income flow through the exchange of a security for security and begin to think about when it makes sense to include these investments as part of a diversified portfolio through understanding of covered types of risks and snapshot analysis.

Slide 3 – The Public Investment Portfolio: Utilizing Repurchase Agreements, Reverse Repos and Securities Lending Agreements **(04:46)**

Linda Louie: So with these objectives in mind, let me introduce our faculty for today's webinar. Rick Phillips is the president and chief investment officer at FTN Financial Main Street Advisors. Some of you may know him as the founder of the Government Investment Officers Association. Prior to starting FTN Main Street, Mr. Phillips managed Clark County, Nevada's portfolio from 1998 to 2004 and was also the investment officer for the City of Las Vegas from 1989 to 1998. He has over 25 years of experience in cash and investment management. Mr. Phillips has a Bachelor of Science in finance from Brigham Young University and a Master of Business Administration from the University of Utah. He also holds the Certified Cash Manager designation and has passed the NASD 7 Series exam and holds an NASD 65 license.

Next, we'd like to introduce Thad Garrison. Thad is a director and senior banker at Citigroup and supports the firm's state and local government clients in the Western United States. And prior to his role, Mr. Garrison was the North America securities lending product manager at Citi. Mr. Garrison has worked in the financial services industry since 1988 and has 28 years of experience in treasury, investment and asset servicing, with over 12 years in client management. And in his earlier years, Mr. Garrison held various institutional relationship management, product management and operations roles. He earned his Bachelor of Arts at Rutgers University and a Master of Business Administration in accounting from Fordham University, and he has written white papers on securities lending, which were published in the *Institutional Investor* magazine. He, too, holds a Series 7, 63, and 79 FINRA License. So with these introductions, let's now turn the program over to your faculty for the next hour plus. Why don't we take it away.

Rick Phillips: Thank you, Linda. Rick Phillips here. Welcome, everyone, to the webinar today. Thad and I are excited to discuss these strategies with you. I will first talk about repurchase agreements and Thad will talk about reverse repurchase agreements and securities lending.

Slide 4 – Repurchase Agreements (Repo) (07:13)

Rick Phillips: So many municipalities actually do not utilize these strategies, and those that do are typically the larger portfolios in the state. But many money market funds also invest in repurchase agreements, and we know many local agencies use money market funds. So it's good information to know even if you may not use them for your portfolio. So let's start with the definition. A repo is the sale of a security with a simultaneous commitment by the seller to repurchase the security from a buyer at a future date at a predetermined price. This transaction allows one party, the seller, which would be the broker-dealer, to obtain financing from another party, the buyer, which is the municipality, local agency. The security is held as collateral protecting the buyer against the risk that the seller is unable to repurchase the security as designated in this way. A repo transaction may be thought of as a collateralized loan to a seller of a repo. So think of it – whenever you're purchasing a debt security for your portfolio, it's the same thing. You are issuing a loan to that issuer. You're doing a loan with that issuer. Next slide.

Slide 5 – Repurchase Agreement Transaction Details (08:32)

Rick Phillips: So a picture is worth a thousand words. So let's say you received $10 million of receipts today, and you don't need it until tomorrow to cover your payroll. So you go out and

contact repo dealers that are approved in your investment policy and find the best rate. And so you do the transaction with them, and then you inform your custodian to send $10 million to the repo dealer. And simultaneously, your custodian will receive, before they send that cash, they'll receive the government security as collateral. Then the next day, when the repo matures, the repo dealer will return the cash plus the interest you earned, and then you'll instruct your custodian to return that security as collateral to the repo dealer. So what might be the risk in doing a repurchase agreement? Well, the primary risk, as I mentioned in the definition, is if the repo dealer cannot return your cash that you had loaned to them. Now, so let's say they filed bankruptcy. So back in the financial crisis, that of course was Lehman Brothers, and a great test of the repurchase market and the system was that all of the Lehman repos settled. All the investors received their cash back and the collateral was returned to Lehman.

Slide 6 – Repurchase Agreements **(09:50)**

Rick Phillips: And the next slide. Talk about the history. So in the United States, repos have been used from as early as 1917, when wartime taxes made older forms of lending less attractive. At first repos were used just by the Federal Reserve to lend to other banks, but the practice soon spread to other market participants. The use of repos expanded in the 1920s and fell away through the Great Depression and World War II, then expanded once again in the 1950s and enjoyed a rapid growth in the 1970s and 1980s in part due to computer technology.

So why does the repo market exist? So primary dealers, banks and broker-dealers, they need to finance their operations. So let's say that you need to, want to rebalance your portfolio or have a cash flow need, so you need to sell a Treasury note that you own. So the broker-dealers go out and get your bids, find that best bid. So the broker-dealer will buy that security from you. So to get the cash, they could use their own capital or they could issue commercial paper, for example, or they might find funding in the repo market most advantageous to them and be cheaper. So it's a way for broker-dealers to finance and banks to finance their daily operations that's going on.

Another big participant, as I mentioned in the definition earlier here, is the Federal Reserve. Over the last few years, the Federal Reserve's balance sheet has expanded from about $1 trillion to $4 trillion through the quantitative easing program, and they own a lot of securities, Treasuries and agencies on their balance sheet. And so they can use those securities as collateral. And so investors, like a banker broker-dealer and now money market funds, can go to the Fed and do a repo with them, and then the Fed will give them collateral and then return the cash with interest the next day. This will be one of probably the primary ways that the Federal Reserve will hike interest rates. With the Fed funds market being much smaller market than it was in the past due to the Federal Reserve's big balance sheet and those reserve balances at the Fed, what they can do is then increase the rate that they will pay on repurchase agreements to a money market fund, for example, and so the money market fund can then buy, instead of getting five basis points at the Federal Reserve today, they can get 25 if the Fed signals a hike maybe as early as next month. So the money market fund then can raise the interest rate that they're paying on the fund and short-term investors like us can earn higher rates, and that's how the Fed will most likely start to raise interest rates during this hiking cycle.

Slide 7 – California State Code – Repurchase Agreements **(12:27)**

Rick Phillips: Next slide. So let's look at what the code says. Investments and repurchase agreements may be made on an investment authorized in this section when the term of the agreement does not exceed one year. The market value of securities that underlie a repurchase agreement shall be valued at 102% or greater of the funds borrowed against those securities and the value shall be adjusted no less than quarterly. Since the market value of underlying securities is subject to daily market fluctuations, the investments and repurchase agreement shall be in compliance if the value of the underlying securities is brought back up to 102% or later the next business day.

Most repurchase agreements are done on an overnight basis and just rolled each night. And so this mark to market, making sure the collateral of 102% or greater, just occurs when the repo transaction is initiated. But let's say, for example, you do a term repo, which is greater than one day. You could have that collateral that you hold, if interest rates go up, the value of your collateral will go down, of course, and so you would need to have more collateral sent from the repo dealer to your custodian to make sure you're above that 102%. So, for example, if you own, if the collateral is a five-year Treasury note, for it to drop to 100% so you're still protected, that would be only a 40 basis point increase, which probably wouldn't occur overnight, but could happen. And so we know interest rates can be volatile the other way, too. Last October, when interest rates really went down, that's when the repo dealer would say, hey, the value of our collateral has gone up, we need to have your custodian send collateral to us and so they can redeploy that collateral and make better economic sense for them.

Slide 8 – Repurchase Agreement Details (14:18)

Rick Phillips: Next slide. So let's look at an actual repo transaction that we did for one of our clients a few weeks ago. We had $10 million par value. This was an overnight repo as you see the trade and settlement date on 7/23, with the maturity date being 7/24. We received 15 basis points on that repo. And right below that, here's the collateral that our client received – the Treasury note, the 4 ¼ of August 2015, $10 million par value. The price at [*100.22*], with accrued interest being about $184,000. So that's part of the total value of the security. So over to the right, we calculate, did we have enough to make sure it was sufficient? And we do the calculation that was at 102.1%, so above what was required. And so we see that interest computation being $10,000,000 x 0.15 x 1 day / 360 day basis gets you the $41.67 of interest. So in the financial market, you know you can have that stress causing changes in the value of securities. And so that's where if you're doing these on a term basis that you'd need to be monitoring the collateral's value to ensure it is above that 102%.

Slide 9 – Comparative Money Market Instrument Yields as of 7/28/15 (15:37)

Rick Phillips: Next slide. So let's look out and see how from a comparative standpoint, how you could utilize a repo or other short-term instruments in your portfolio to provide for the liquidity needs you have. So last week I went out and got information for various short-term investments. So the overnight repo rate, looking at four primary dealers that we work with, was 14 basis points, ranged from 11 to 16 basis points. Overnight commercial paper on our approved list of A-1/P-1 issuers was 11 basis points, again ranging from 1 basis point to 15 basis points. Overnight-ish T-bill, 7/30 maturity – so two days later – had 3 basis points. Overnight discount note had 2 basis points. Only Federal Home Loan Bank was posting that day. And LAIF had 32 basis

points. And then let's say you don't need the money for seven days, so you can see all the different rates for a one-week repo: 15 basis points, 1 basis point higher; commercial paper, at 1 basis point higher at 12; a T-bill, one week, 3.5 basis points; and an agency discount note more than double, up to a whopping 5 basis points, with Home Loan posting only that day, as compared to LAIF being 32 basis points.

So LAIF is a great investment for most municipalities for your liquidity needs. Look at the rate differential. Much higher. But we never want to have all of our liquidity eggs in one basket, and so many municipalities also have some money in a money market fund or utilize these other short-term instruments because we know you can put up to $50 million in LAIF. But for larger entities, once you utilize that $50 million you might have other, of course, liquidity needs you need to meet.

Slide 10 – Short-Term Investment Rates **(17:22)**

Rick Phillips: So if you look at the next page, this is comparing short-term interest rates, investment rates over the past year back to last August. So we can see LAIF on the top averaged about 27 basis points over the last year. The purple line is overnight commercial paper rate. Those same A-1/P-1 issuers averaged about 13 basis points. Down at the bottom, the red line is agency discount notes overnight rate there, between 1 and 5 basis points. And then definitely a more volatile rate is overnight repo rate. And so sometimes dealers really don't need a lot of cash, so they don't post very large rates even down to one basis point. And then sometimes usually at quarter-end, those two spikes you see are when they're needing funding to have their balance sheets look a certain way at quarter-end. And so we can see that was March 31st at 35 basis points and June 30th recently at about 32 basis points. And so you ask why would LAIF be so much higher, because I have same-day liquidity as these other instruments, compared to these other instruments? But LAIF has a 240-day weighted average maturity, or WAM, and so with an upwardly-sloping yield curve, you'd obviously think they could earn a higher rate. One thing to consider when the Fed does start to hike interest rates, these overnight rates will reset and go up probably could be above LAIF, and so that would be something you would want to consider from your asset allocation.

Slide 11 – Large California Municipality **(18:51)**

Linda Louie: Good. I think we have a question here. It's a good time to ask. How does the collateralization calculation work if you have a standing agreement with a trustee to invest your liquid cash on a nightly basis? And so how do you test to confirm that it's in compliant with government code?

Rick Phillips: So most custodians will show you a report. And I'm going to talk about two different – delivery versus payment (DVP) and tri-party in a minute. But your broker-dealer, if you're doing a delivery versus payment repo, you're going to see that collateral because you need to let your custodian know that, and so they'll provide you the price that that Treasury note is your collateral. And so you could calculate that to see is it sufficient. Like that spreadsheet…. Let me just go back a couple of pages and do that.

Return to Slide 8 – Repurchase Agreement Details **(19:40)**

Rick Phillips: So you could calculate to see if it's sufficient. If you're doing a term repo, your custodian will provide a value of your collateral each night that you could go out on your custodian system and get the price and the value of that collateral just to ensure for yourself. And that's part of their responsibility as custodian, but you could also double-check that to make sure it's that 102% or higher.

Linda Louie: Okay. Good. Thank you.

Return to Slide 11 – Large California Municipality (20:10)

Rick Phillips: So just showing you an example of a large California municipality for which we do consulting, you can see about a $6 billion portfolio, large allocation, federal agencies like most municipalities. And right at the month-end – I think this was May 31st – they had a $100 million repo outstanding. And they actually usually run about $200 million, and so it helps with their liquidity portion of their portfolio.

Slide 12 – Investment Policy Considerations (20:39)

Rick Phillips: So investment policy considerations. So the three things by code is the maturity cannot exceed one year, it has to be collateralized at 102% or greater, and as I mentioned earlier each day, and it has to be collateralized by code and investment policy allowable securities. Some considerations if you're looking to put this in your policy and into practice for repo, you might want to consider: should I have a dealer or issuer limit? And so I'd say, well no greater than, say, 20% of my portfolio could be with one issuer or dealer. You might want to consider: should I have minimum issuer ratings for long-term debt or short-term debt? It has to be A+ or better. And code does not have a limit on repo. You could technically have up to 100% of your portfolio in repo. Probably not a good idea. So maybe you should set sector limits that say no greater than 50% of my portfolio, for example. And then as I was just talking a minute ago, there are two different types that the custodians that you could have. You could have a delivery versus payment, and that's again where each day you're doing an overnight repo, then the repo dealer will send you what collateral they're going to be… they'll tell you what collateral they're going to be sending to your custodian. You let your custodian know to expect this and you're sending $10 million, expect this $10,200,000 of collateral. And so if you're doing a term repo, you're going to have to be just monitoring that yourself each night and making sure that that collateral is sufficient. Your custodian is as well, but you would want to have your repo dealer also send you the value of the collateral if you don't have a Bloomberg, for example.

Another way to do this is the tri-party repo, which helps alleviate some of that daily interaction that you would have with your broker-dealer. So for example, if you did a term repo of seven days, then the tri-party custodian, which there are two – Bank of New York and JP Morgan – they would be monitoring that value of your collateral and interacting with your broker-dealer, your repo provider, to ensure that it's at 102% or greater. And so because the market moves each day and you do a $10 million repo, you could have $50,000 or $100,000 collateral bouncing back and forth. So a lot of paperwork. And what tri-party also helps with is transaction cost because the delivery versus payment custodian arrangement, you'll have transaction costs every time that collateral is going back and forth. So tri-party helps eliminate that and usually can provide a basis point or two higher of a repo rate.

Then, one other consideration is allowable collateral. You might say by code you can have Treasuries and corporate notes and agencies, but you might want to just say, I only want Treasuries, and you could just say three years and in. But you would probably want to do five years and in. But you could have that as a stipulation in your code because if you think about it, back to that risk, say your repo counterparty goes under, well then your custodian is going to be holding that collateral for your protection. And so you'd want to sell that security to make up for the cash that you gave the repo dealer and so you're made whole. And you might think, well yeah, my repo dealer goes down and the value of my security goes up because usually in stressful times of the market the value of Treasury notes will go up as interest rates go down, and you say wow I could make a great gain on my collateral. But you're only going to be made whole at your 100% of cash that you gave.

Slide 13 – SIFMA Master Repurchase Agreement (24:17)

Rick Phillips: Next page. So finally, there is a master repurchase agreement by SIFMA, the Securities Industry and Financial Markets Association, that you'll need to execute with each of your broker-dealer counterparties. And so that's something that's a global master repurchase agreement that's standardized. And so your attorneys will look at that, your governing body most likely would execute that for you. So you definitely need to have that in place before any repos would occur. And that's my part finished. Any questions to entertain, Linda, at this point?

Linda Louie: We have one. So in terms of repo collateralization, if it drops below the 102%, does an agency have any options other than selling or waiting it out, and is the issuer required to do anything to add collateral if it falls below that 102%?

Rick Phillips: Yeah, that's definitely part of the custodian's job, and the repo dealer, the counterparty to the municipality is required to post $50,000 whatever, $100,000 more of collateral to get it up to the 102% or greater. So that definitely has to happen each day. And that's what your custodian – part of their responsibility is to do that. And that's where a tri-party arrangement is helpful in the sense that they're doing that for you in the background. Now, just as a side note, we'll mention here that tri-party repo – the agent, say JP Morgan, is the tri-party custodian – they could send the $10 million to the repo dealer and the repo dealer had to, later in the day actually, to send the collateral. So there could be some risk of timing that JP Morgan actually was providing that security for you as a municipality. And so if Lehman went under, they had your cash and they hadn't sent the collateral. So that's been tightened up with tri-party repo reform. And so delivery versus payment, you actually see the collateral. Your broker-dealer would send you what you'll receive as collateral and then you tell the custodian, look for this. Let's just say you do it for seven days again, that's where you'd be monitoring it and the custodian would be monitoring. If interest rates go up, the value of my collateral goes down. More collateral from the dealer would need to be sent to your custodian. And vice versa. If interest rates drop, the value of the collateral goes up and the dealer would want some of that collateral back to utilize for another repo or other reasons.

Linda Louie: That's a good explanation of the dynamics. Okay, thank you.

Slide 14 – Reverse Repo/Securities Lending Transaction Details (26:48)

Rick Phillips: Now, we'll turn it over to Thad.

Thad Garrison: Okay. I'll take myself off of mute. Good morning, good afternoon shortly, to everyone. Again, my name is Thad Garrison. I'm here to talk about securities lending, but to Rick's point, we'd like to first segue for a moment and talk about a reverse repo. And conceptually, a repo and a reverse repo are exactly the same transaction; it's just from whose perspective you look at the transaction. So in the example here on the slide 14, you see an example of a reverse repo where the municipality is basically selling temporarily their securities and receiving in cash and that's the first grid. The second component is where the revenue is actually made, and you'll see the cash being returned to the broker-dealer. The broker-dealer may invest in short-term securities that will generate income and revenue from that transaction and that's where the revenue generation is made. At the end of the transaction, obviously, it's unwound and the cash is returned to the repo dealer and the securities are returned back to the municipality in a delivery versus payment mechanism. So, really again, a reverse repo and a repo are the same transaction just from whose perspective you look at those transactions. And we've seen in a lot of our discussions with public sector entities, sometimes they refer to a transaction as a repo, but really they're standing in as the reverse repo side of the transaction and sometimes there's a little bit of confusion about the terminology. But that is the structure and place for it, what's called a reverse repo.

Slide 15 – California State Code – Securities Lending and Reverse Repurchase Agreements (26:50)

Thad Garrison: So on to the next slide. When we're talking about securities lending, what we – actually, I just want to make sure we're on the same. Sorry, let me go back here. My mouse is moving very quickly. Sorry about that. So you see on slide 15 a brief discussion of the government code and what you see is that in Section 53601 of the code, securities lending and repurchase agreements really fall under the same guidelines in terms of overall structure. The securities have to be held by the beneficial owner of those securities for 30 days in section A. Section B, the maximum amount of securities that can be on loan for any given time is 20% of the total portfolio value. And then third, securities long-term cannot exceed 92 days. Of course, those agreements can be for periods of time shorter than that. They can be overnight. They can be one week, two weeks, but 92 days is the max. As a side note, securities can be lent for more than 92 days but a written codicil needs to be in place that basically guarantees that structure over the next period. But for most parties in the State of California, as far as the code is concerned, 92 days is typically seen as the max.

Slide 16 – What is Securities Lending (30:20)

Thad Garrison: Okay. So when we talk about securities lending, I guess a good way to start is to really make sure we all understand what securities lending is. And really securities lending is a contractual process between a lender, a borrower, and an agent in this structure which stands in between the borrower and the lender. That's the key difference between a repo and a securities lending transaction. There's an agent in between that has a specific role and duty in the process that really separates it from a repo transaction. And we'll talk about that in a minute. So basically what you have at the onset of a security lending arrangement is an agreement between the lender and the agent, and they sign a securities lending agreement, which allows and enables the agent

to lend securities on behalf of the borrower to approved broker-dealers. So securities are lent temporarily from one party to another. The borrowers tend to be large institutional investors, again, broker-dealers that need to cover short positions or to cover fails in the market. And really over the last few years, changes to the rules on failed trades and the costs for those transactions have increased the utilization of securities lending because a broker-dealer really doesn't want to fail in the market and incur extremely high costs for those fails. So they'll borrow securities to prevent that fail in the market. Securities, again, are borrowed for a certain period of time. It's agreed upon at the onset of the securities lending transaction.

So just to give you kind of a quick overview of how that would work, again, is a securities lending agent would set up contractual arrangements with a pool of borrowers. Some lending agents have as many as 50 to 60 broker-dealers they work with at any one time…[*audio feed lost*]…as part of the bond market association's rules for borrowing securities. At the same time, that lending agent will set up a contractual relationship with the beneficial owner of those securities, and we'll talk about the types of beneficial owners in a moment. But once that contract is created, the securities lending agent will borrow securities or, excuse me, actually allow the borrower to have his securities lent to broker-dealers and the agent will sit in between and negotiate those transactions on behalf of the borrower. And again, what's the demand drivers for securities lending? It's, again, to cover shorts, avoid fails and part of many broker dealers overall strategy. What we've seen over the last few years is that due to increased regulation, broker-dealers themselves have used securities lending less and less because of Volcker Rule and certain regulations that have started to prohibit proprietary trading strategies. So what the broker-dealers will do is they have relationships with hedge funds and other investors in the marketplace that also need those securities and that's how the demand is driven for securities lending.

Slide 17 – Securities Lending Participants **(34:09)**

Thad Garrison: I'll stop for a quick second and see if there's any questions.

Linda Louie: We have none at this time, Thad.

Thad Garrison: Okay, great. So again, who are the participants in a securities lending transaction? Again, the lenders are large pension funds, CalPERS, CalSTRS referring to California specifically, but pension funds all over the country and all over the world are very large securities lending participants. Corporate plans, General Motors, Apple. You name the company, they probably engage in securities lending as a form of revenue enhancement. State and local governments, less so, and we'll talk about that towards the end of our conversation. But certainly, it is an important component in the pool of lenders in the marketplace. Mutual funds are probably the second largest…[*audio feed lost*]… their mutual fund portfolios. If you were to look at just about any mutual fund, say your personal investments and if you have a mutual fund, if you open up the prospectus, you'll typically see language around the use of securities lending and certainly revenue on their income statement for securities lending. It is a very important component of mutual fund companies' operations. Again, the borrowers are broker-dealers, hedge funds and again, banks, but they have decreased their use in lending in recent years because of the Volcker Rule.

Who are the lending agents? The large custody banks basically have, I would guess, anywhere from 80 to 90% of the marketplace, and between the five custody banks listed – State Street, BNY Mellon, Citi, JP Morgan, and Northern Trust – I would venture to say that those five custody banks probably, again, have 80 to 90% of the securities lending market as an agent in the marketplace. There's a couple of third party firms. These firms are not custodians, but they electronically link up to a custodian bank and actually drive the securities lending transaction as an agent. And those are E-Sec Lending, SunGard, EquiLend. There's a couple of other smaller names, boutique firms, if you will…[*audio feed lost*]… banks.

And just for a little bit of history, the large custody banks have been in securities lending since the late 1970s. It was originally used as purely as a way to cover operational trade fails. And it was more prominent and still is in some degree for other types of securities, not necessarily U.S. government and agency securities, but certainly equity securities where the actual supply and trading volume of a particular equity security may be much smaller in the marketplace and the need to borrow that security to avoid a fail is much higher. Also international securities are very, very much in demand as instruments for securities lending due to, again, their limited supply and also because of that limited supply, it drives up demand and actually, the revenue associated with securities lending for international securities is typically much higher than domestic securities.

Slide 18 – Securities Lending Basics **(37:55)**

Thad Garrison: Okay. Again, the basics of securities lending. Again, there's a slight difference between a repo and a securities lending transaction, where a securities lending transaction is viewed as a loan of the security. The title of the security transfers to the borrower, so the lender retains the economic benefits of those securities and they shadow post on their books as such. But the actual benefits in terms of actually holding the securities for things like voting rights, which is a demand for equities, which generates demand for equities, is a…[*audio feed lost*]… or for equity securities, wanted to vote on their securities, they'd have to recall them back from loan because, again, once that title is transferred, that temporary owner of those securities has voting rights. Again, not a big factor for municipal clients because they typically do not hold equity securities.

In terms of the collateral ownership, the borrower retains the economic beneficial ownership of the collateral. In the event of a borrower default, the lender may be able to take full possession of the collateral. So what happens there is, if for whatever reason a borrower did not return securities at the end of a securities lending transaction, the actual beneficial borrower of those securities is able to take possession of that collateral, sell it, and then go out into the marketplace and purchase those securities to replace the securities that were not returned by the borrower. Most collateral typically consists of cash. I'd say the large majority of securities lending transactions in the U.S. are 100% cash. You will find some examples where it may be split 60/40 or 70/30, with cash being the primary form of collateral. Government securities is a very common form of collateral in non-U.S. markets. In the U.K. and other parts of the world, U.S. government securities is the form of collateral. And how the revenue is generated by a fee versus the income based on the reinvestment of cash collateral, when you're using government securities as collateral. And then letters of credit. I myself have never seen a letter of credit, securities lending transaction, maybe it's just what I've seen in terms of the business that I'm in here at the bank I work for, but I would venture to say it's very rare in the marketplace due to

pricing costs of letters of credit. Again, the collateral is matched versus every single loan. It's the mark to market process that Rick mentioned before. And there's margin associated with the value of that collateral. So you're always receiving excess collateral based on the…[*audio feed lost*]… margin of safety to those transactions.

Slide 19 – Securities Lending Basics (cont'd) (41:20)

Thad Garrison: Okay. In terms of accounting, this is straight from the GASB guidelines on accounting treatment. It's very clear and very self-explanatory. Securities that are lent, the underlying securities are always recorded as an asset as they were prior to a loan. The cash received as collateral is considered an asset as well. The liability comes in on the balance sheet where there is the obligation, obviously, to return that cash collateral at the end of a securities lending transaction. And on the income statement, the revenue associated with securities lending and the rebate which we'll talk about in a moment is also recorded as an expense on the income statement.

Slide 20 – Securities Lending Basics (cont'd) (42:11)

Thad Garrison: Before we talk about the next slide on page 20, I'd like to kind of just briefly conceptually walk through a loan. So for example, a municipality that is a client of a particular custodian bank that has an agreement in place to lend their securities, the way the process typically works is a broker-dealer would call that custody securities lending agent looking for a particular security. Let's say it's a $50 million…[*audio feed lost*]… security again, it's…[*audio feed lost*]…

Linda Louie: We're having some connectivity issues here. Rick, are you able to…

Thad Garrison: …of that security to the borrower. So they will agree on a cash collateral investment return rate called a rebate. So, again, the security that's under negotiation is being discussed as a $50 million U.S. treasury. So, of course…[*audio feed lost*]… a plus 2% margin for that cash collateral. So the broker-dealer or the borrower will deliver cash and the securities lending agent will deliver the securities to the borrower simultaneously, DVP.

Once that cash is received, again, there was a negotiated rate called a rebate rate, which is basically just a portion of the interest that the investment is expected to return on that security. So let's assume for the moment that between the agent and the borrower, the agreement is that the rebate rate will be set at hypothetically 15 basis points. So the lending agent will then agree to return at that rate of interest to the borrower at the end of the transaction. The lending agent now will then reinvest that collateral in a variety of securities. Basically, the securities here in the State of California must comply with the government code. So whether it's another type of money market instrument, a bank obligation, whatever it may be, that reinvestment needs to exceed the 15 basis point hurdle rate, if you will, to ensure that there is enough to return back to the borrower that rate of cash, and then at the same time, enough to earn an incremental amount of income that the lending agent will share with the borrower of those securities. So assume for a moment that it's 20 basis points. So that spread between the rebate of 15 basis points and the investment return would be 5 basis points and that revenue, based on that cash investment, would be split between the lending agent and the borrower at a pre-agreed-upon contractual rate for all

securities that are borrowed. And typically within the marketplace the splits run anywhere between 60/40, all the way down to 95/5 for the benefit of the borrower. So the borrower always receives the lion's share of that revenue split.

Okay. So again, the collateralization for securities is 102% for U.S. government securities and 105% for non-U.S. securities. Securities are mark to market on a daily basis, similar to a repo. Additional collateral is posted if the loan collateral value falls below that pre-established market value. The collateral is reinvested, again, in higher yielding securities that earn a premium to the income, rebated back to the borrower. And the securities on loan are used…Excuse me, when the securities are lent, there is a time value associated with that. So of course if a security is lent for, say, 15 days, that split of revenue based on the $50 million that the securities lending cash was invested for is split with that pre-approved securities lending split, whether it's 60/40, 80/20, 90/10.

Slide 21 – Securities Lending Process Flow **(47:16)**

Thad Garrison: So to kind of quickly review the process flow, I tried to make this as self-explanatory as possible, but let's walk through it for a moment. Again, Step 1 is the agreement to borrow and lend securities on behalf of that approved borrower. Typically the lending agent is the custodian and they have an electronic linkage to the client's custody portfolio. So once the loan is executed, there is a simultaneous delivery of securities and receipt of cash collateral that basically is a first step in the transaction. The next step…[*audio feed lost*]… which is again the mark to market of those securities that are on loan. And what the borrower will receive from the securities lending agent is typically a suite of reports that will show the securities on loan, the mark to market activity, any income that's earned on a daily basis from that securities lending transaction, who the borrower is and a full description of the securities lending transaction. And typically, securities lending transactions are done in an aggregate transactional level. So it will be rare that you would find a client that only has one security out on loan on any given day. Typically, a lending agent could have as many as 100 securities on loan depending on the size of the portfolio and again, full transactional detailed reports are provided to the borrower on those securities on loan. So step four is the actual return of securities at the end of a securities lending transaction. The securities are returned back to the borrower's custody account and the collateral is returned back to the borrower. That's again a simultaneous transaction.

In terms of the revenue component, again, the rebate, which is the cash income generated on the cash collateral, is rebated back to the borrower at a preapproved rate, and again, any remaining revenue is shared between the lending agent and the borrower, and that's a separate transaction. Typically, it's a wire of cash proceeds on a monthly basis that are sent directly into a designated cash account that the borrower has set up specifically for the receipt of securities lending revenue. Any questions?

Linda Louie: Yeah, we do have a quick one. In terms of the extra reports that the custodians may generate, are there extra fees for that? How is that prepared?

Thad Garrison: So typically, everything is included in the fee split agreement, and what you'll find is that the only cost that a borrower would incur, if you will, would be anything that was customized beyond the lending agent's standard offering, but even I would say in most cases

that's rare. So what typically happens is that when the lending agent and the borrower set up their securities lending agreement, again, the split is determined based on the estimated value of the portfolio. So let's say you've got a billion dollar portfolio, the lending agent will estimate how much revenue they think they will be able to earn based on an understanding of the borrower's investment guidelines and will propose a revenue share arrangement, again, which would have its, be in place such that the borrower receives the lion's share of that of that revenue, let's say 80, 90% – let's say 75% just for conversation sake. So then no other fees would apply to the securities lending process. So reports will be included in that. A relationship coverage structure would be set up whereby there is an individual that would most likely be specifically designated by the lending agent to support that securities lending arrangement on a daily basis, in addition to the operational team that would actually go about facilitating the daily movements of securities and cash associated with the securities lending transaction.

Linda Louie: Good explanation. Good to know. Thank you.

Slide 22 – Risks in Securities Lending **(52:29)**

Thad Garrison: Great. Okay. It would be – I would be remiss to not talk about the risks in securities lending. Securities lending has gone through cycles over the last, I'd say, 25 to 30 years whereby things tend to go very smoothly. There is the opportunity for all participants to benefit in terms of revenue and growth of a securities lending portfolio. But I think we've seen throughout the history of securities lending, the risk management component to securities lending always has to be taken into consideration and there needs to be daily management and review of all securities lending transactions. And that includes counterparty risk, actual security risk associated with the slight probability, but always there's a probability that securities will not be returned at the end of a transaction, and to ensure that there is a proper mark to market process in place each day. And that is a risk that is born primarily by the borrower but certainly the lending agent has risk associated with these transactions as well. They obviously could potentially lose income. Reputational risk. And credit risk is certainly a factor that the lending agents have to be concerned with. So on a daily basis what you'll find is that the reports that are sent to the actual borrower at the end of each day or intra-day if the lending agent makes available to the borrower securities lending report so they can see on daily and intra-day basis, and I'd say most of the industry does fall into that category of intra-day reporting. But again, when you're dealing with a transaction where you could have securities on loan with up to say 20 broker-dealers, you want to make sure those broker-dealers are financially sound. And the lending agent will help and support that in terms of their review of those broker-dealers, but also the borrower has to take some responsibility in that credit review and monitoring process.

So again, the four biggest risks are the borrower risk. The collateral reinvestment risk is certainly a key risk, and that's where you find most risk in securities lending. Again, I think in "the good times," there's been times where investment policies associated with the reinvestment of cash collateral have become too aggressive or the lending agent did not follow the exact rules and guidelines set up by the borrower in terms of how to invest the cash collateral. So if a lending agent steps outside the guidelines of the approved guidelines for reinvestment of cash collateral, there have been problems in the marketplace, and I think they've been well publicized over the last 20 to 30 years. And again it seems to happen in cycles. About every 10 years there's an issue with a lending agent or a borrower that runs into problems because of an improper setup of their

collateral reinvestment process or investment guidelines that were too aggressive and leads to potential losses of the cash collateral. And when there's losses that are not due to any errors in the lending agent's reinvestment of that cash collateral, then those losses are born by the lender. So there needs to be proper due diligence in the cash collateral reinvestment process. Operational negligence is less of an issue. Most broker-dealers that borrow securities return them. It's the rarest of occasions where securities are not returned at the end of a lending term, whether that's overnight or weekly or monthly. But again, there needs to be proper review of those borrowers to ensure that they're financially sound and are able to return securities upon the termination of that loan or whenever the borrower would like their securities returned. And within most if not all securities lending agreements, the borrower has the right to request securities be returned to their portfolio at any time, and that is discussed and agreed upon in the securities lending agreement with the borrower and the lender.

And lastly, again, trade settlement risk, which kind of dovetails into operational negligence, but operational negligence is more along the lines of the securities lending agent not taking the proper steps to do things like the mark to market on a daily basis. And trade settlement risk is more associated with the borrower not returning securities to the lender at the end of that term but again, cash collateral that has been invested can be used to purchase securities if there's ever a default on the return of loan securities. So that's the secondary level of security in a securities lending transaction.

Slide 23 – Securities Lending and Basel III (58:41)

Thad Garrison: Okay, just some more of the more recent changes to the securities lending marketplace have to do really with Basel III regulations, whereby there is now an additional capital cost to banks to engage in securities lending. As a result of the financial crisis, the regulators have asked lending agents to set aside more capital for securities lending transactions. So really, the big picture impact is that now there's a bigger hurdle rate for securities lending transactions, which means that lending agents have become somewhat more selective in the clients they bring on board. They need to make sure that there's enough profitability in a securities lending transaction for them to engage in securities lending or the economics just will not work. At the same time, borrowers have the same demands for higher capital costs and their hurdle rates are now even higher for them to borrow security. So for whatever transactions they are taking on on their side, they need to make sure on a macroeconomic level that there is enough of a return for them to engage in trades that result in securities lending demand. And again, the impact to the lending agent, excuse me, the lending community is that the fee splits will probably change in the future, whereby the actual lending agent will probably seek to require a greater portion of the revenue split because of the cost. So without additional revenue, I would guess that most securities lending agents will struggle to find the economic benefit of engaging in securities lending transactions unless there's some change to the Basel III regulations in the future. And I think there's still some room there for additional discussions at some point in the future. But in the current environment, securities lending has become a little bit more difficult to undertake from all parties in the marketplace.

Slide 24 – Securities Lending vs. Repo (1:01:10)

Thad Garrison: Again, just to kind of wrap up in terms of securities lending and repo. I see them as cousins, really. They're basically the same transactions with some slight differences and really, again, the difference comes into play with the fact that a securities lending arrangement has an agent that stands in between the transaction…[*audio feed lost*]… somewhat more of a broader transaction process in the sense that securities lending utilizes domestic securities, international securities, U.S. government securities, agency securities, which is typically broader than a repo transaction, which is typically just U.S. Treasury and U.S. agency securities. And another big distinction between the two is that the lending agent negotiates again multiple loans simultaneously on behalf of a borrower, whereas in a repo transaction, it's typically an individual single transaction trade and there's no opportunity to really aggregate those transactions to generate the potential income that a securities lending agreement generates for a borrower. Securities…[*audio feed lost*]… so for example, let's say a broker wants to borrow a particular security from a borrower's account. What the lending agent will do is say, well, if you want that one security and I know you really want it, you have to take 10 other securities from us as well. That way, the economics of the securities lending transaction is large enough to generate what would be called a material revenue for that transaction. So if a borrower called and said, I want to borrow a $10 million security and it was in very much high demand, five broker-dealers are calling at the same time for that particular security, that lending agent will basically ensure that the borrower that is willing to pay the most for that security will be able to generate the revenue associated with that transaction by negotiating on behalf of the borrower for those…[*audio feed lost*]… to take 10 more securities to compensate both the lender and the agent for giving that security to that borrower.

One other component to lending is that…[*audio feed lost*]… just a basic logarithm, which ensures that every lender in their pool of potential participants in the securities lending transaction all get a fair share of lending their portfolio. So let's say a lending agent has 25 clients and they all have the same security, what happens is the securities lending agents have systems that say, okay, we're going to do basically a very simple logarithm that ensures that every lender in that portfolio that has that security gets a share each time that a request is generated for a security such that every participant in a client's portfolio has the opportunity to have their securities lent. Now, where the difference comes in is when that security requires more than what that particular borrower has. So let's say that borrower only has $10 million and the borrower is looking for $50 million. So the borrower, excuse me, the lender will have that $10 million security lent but then the next $40 million will, the lending agent will see who has that security, ensure that the borrowers that want those securities will pay the highest rate if there's more than one borrower looking to borrow the same security.

Slide 25 – Large California Municipality **(1:05:56)**

Thad Garrison: Next slide. I'm going to pass it on to Rick again, and he'll talk about a large California municipality's portfolio.

Rick Phillips: We thought we'd just wrap up with a real world example of an entity that does securities lending. Again, this is one of our clients we do consulting for. And you can see I just highlighted the bottom because primarily the demand securities as Thad mentioned are the Treasuries. And so of about a $6.8 billion portfolio, they have about $4.5 billion of Treasuries. And if we see on the next slide here, let me click.

Slide 26 – Securities Lending Revenue Example (1:06:35)

Rick Phillips: And so down at the bottom, it shows the amount of securities on loan at month end. And obviously this will change each day as securities are in demand or less demand. So they average about $700 million of the $4.5 billion of the Treasuries generally that were out on loan. And you can see up above, after their fee split with their sec lending agent, they generated almost $400,000 this last year in securities lending income. So, you know, not a huge amount on a portfolio that size but certainly helps provide revenue for the entity. So we just wanted to finish up and to show you what securities lending could do and has to be done generally on the large portfolio. And that's it.

Linda Louie: That's great.

Slide 27 – Questions (1:07:28)

Linda Louie: Let's see here. Maybe we'll take a second to see if we have any questions from our audience. We apologize for some of the audio difficulties that we had on the securities lending. It seemed like, Thad, we lost you every maybe three seconds interspersed here and there. But if there are no questions regarding some of those missed blanked audio parts, let's check with our attendees here for a second. There don't seem to be any incoming questions at the moment and I think that's because we had some masters present this information in a very succinct way on money markets and the category of looking at securities lending and, of course, the look at reverse repurchase agreements and this really is an interesting topic. And you know it's something as the market changes and some of the reform changes, it will allow the banks to either look at what they can or cannot do in terms of the cash requirements and how they can structure in terms of the macroeconomic and microeconomic views that were pointed out in the presentations. So we were very pleased to have Thad and Rick on this. So thank you.

Slide 28 – Public Investment Webinar Series: The Public Investment Portfolio (1:09:00)

Linda Louie: So before we close, I'd like to draw your attention to some of the remaining slate of webinars in this investment series. The agendas and registration instructions for each of the webinars are posted now, of course, to the CDIAC website as they have been all summer. Our next webinar will be scheduled for August 19th when we will be examining corporates in the public investment portfolio. And again the CDs and deposit placement services and collateralized bank deposits will be delayed due to speaker arrangements. And so we'll broadcast that on a new date of Wednesday, September the 9th. So if you're preregistered for the CD webinar you should have received a new meeting notice to keep your registration. But if September 9th does not work for your schedule, you have the option to cancel your registration and view the posted recording at a later date. And we will complete our public investment webinar series late this summer with our money market fund and pooled structured securities sessions in September.

So in closing, again, and on behalf of CDIAC I'd like to thank Rick Phillips, Thad Garrison for their dedication of time and expertise to making this webinar excellent. And a big thank you to our CDIAC education team as well. And that would include Sandra Kent and Susan Mills for

their work on producing this webinar and also working with our speakers. And thank you to all of you for your participation and retention on this webinar, and we hope with hope we look forward to you joining us again in two weeks for our next broadcast. So with that, we'd like to say have a great day and these will be posted on our website in two weeks. And keep an eye out for our summary workshop that will present in early 2016 that will be kind of a summary capstone of this webinar series, but at a more intermediate/advanced level discussion of some of the different categories and instruments that you've been viewing during the course of this webinar. So thank you very much.